DIRECTION BOOK

"ROCKWELL"
EARLY MODEL
HARDNESS TESTERS

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USE AND CARE
OF
EARLY MODEL "ROCKWELL" HARDNESS TESTER

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UNPACKING & SETTING UP YOUR "ROCKWELL" HARDNESS TESTER.

After carefully removing the tester from the packing case and placing it on the bench where it is to be used, remove the weights, weight pan, box of small parts and dust cover.

NOTE: In moving the tester it should be grasped only by the main frame and never by any of the parts attached thereto. It should be handled gently. The bench where the tester is to be used should be reasonably level, clean and free from vibration.

Remove the cowl. Remove all packing material from the tester. Tags are tied to all strings and felt wedges.

Fill Dash-Pot:

1. Turn load release crank handle COUNTER-CLOCKWISE TO STOP.
2. Open NEEDLE VALVE by turning COUNTER-CLOCKWISE.
3. Unscrew dash pot cap and lift clear of dash pot body.
4. Fill with the oil supplied with the tester (S.A.E. No. 10W) to approximately 1/4" below the top by-pass hole.
5. Replace the dash-pot cap.
6. Trip load release crank handle and re-cock several times to pump the entrapped air from below the dash-pot piston.
7. Turn needle valve CLOCKWISE to adjust the dash-pot speed. With the 100 kg. weight hanging from the weight hanger, it should require 4 to 6 seconds for the full drop.

Lower elevating screw by turning capstan nut counter-clockwise. Carefully clean all the oil from all anvils. Place the spot anvil in position on the end of the elevating screw.

Select the penetrator to be used and insert in the end of the plunger rod. DO NOT UNSCREW THE GRIPSEL PENETRATOR SCREW. The penetrator can be inserted by a slight upward push and held in place by a spring loaded ball, the flat on the penetrator shank must be toward the "GRIPSEL".

Hang the weight pan on the link hanging below the power arm of the tester. Select the proper load for the indenter to be used from the engraved chart on the front of the tester just back of the elevating screw.

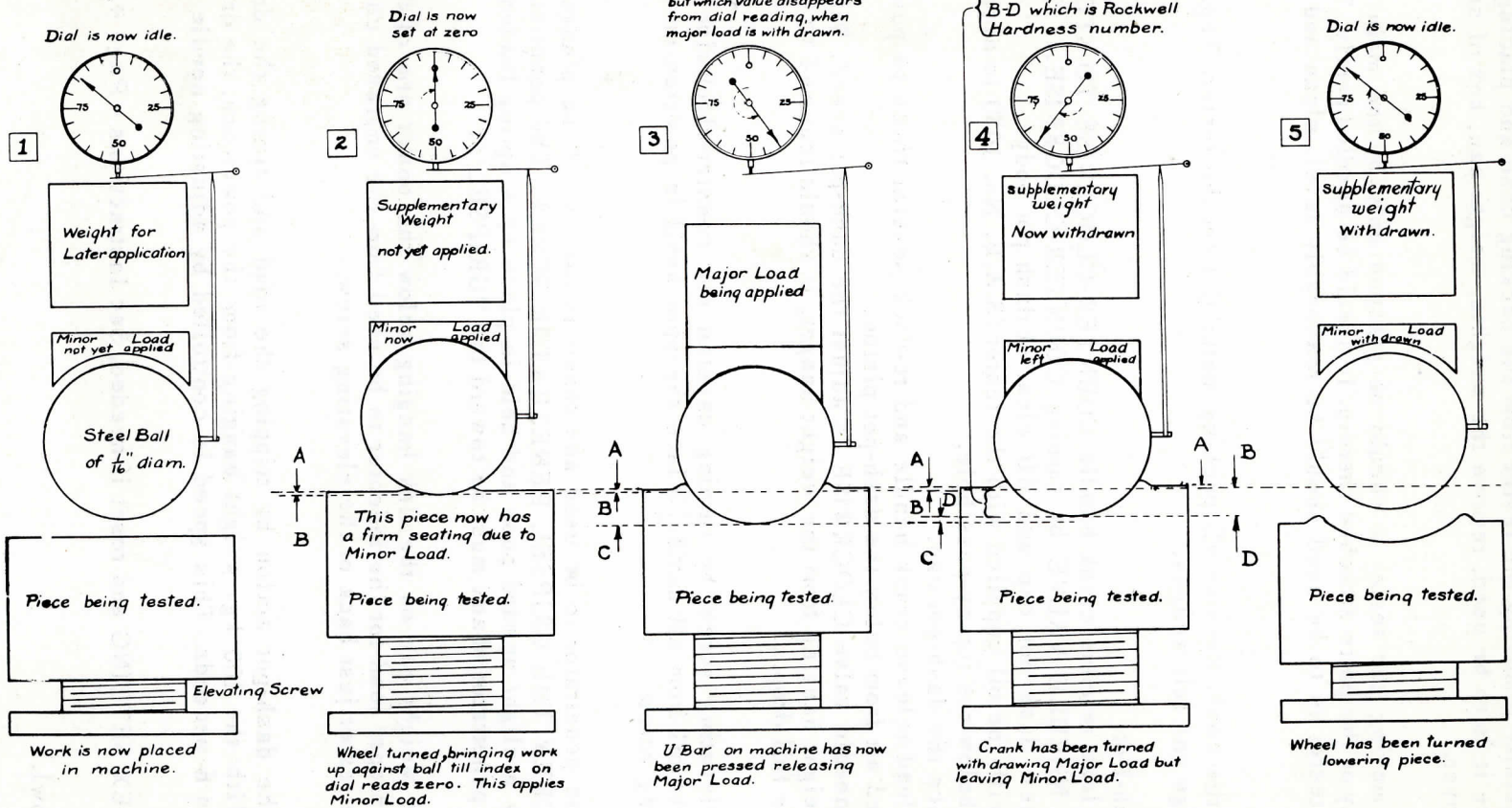
Adjust the dash-pot action by tripping the load and timing the drop of the weights. With the 100 kg. weight hanging from the power arm, the drop should require 4 to 6 seconds. This speed is controlled by adjusting needle valve.

Check INDEX SETTING and reset if needed. See Instructions - Page 9.

Replace cowl.

Your "ROCKWELL" Hardness Tester is now ready for making tests.

observe the important fact that the depth measurement does not employ the surface of the specimen as the zero reference point and so largely eliminates surface condition as a factor.


1
Dial is now idle.
Weight for Later application
Minor Load not yet applied
Steel Ball of 1/16" diam.
Piece being tested.
Elevating Screw
Work is now placed in machine.
2
Dial is now set at zero
Supplementary Weight not yet applied.
Minor Load now applied
A
B
This piece now has a firm seating due to Minor Load.
Piece being tested.
Wheel turned, bringing work up against ball till index on dial reads zero. This applies Minor Load.
3
Dial now reads B-C plus a constant amount due to the added spring of the machine under major load, but which value disappears from dial reading, when major load is with drawn.
Major Load being applied
A
B
C
Piece being tested.
U Bar on machine has now been pressed releasing Major Load.
4
Gauge now reads B-D which is Rockwell Hardness number.
Supplementary weight Now withdrawn
Minor Load applied
Minor left
A
B
D
C
Piece being tested.
Crank has been turned with drawing Major Load but leaving Minor Load.
5
Dial is now idle.
Supplementary weight With drawn.
Minor Load with drawn
A
B
D
Piece being tested.
Wheel has been turned lowering piece.

NOTE - The scale of the dial is reversed so that a deep impression gives a low reading and a shallow impression a high reading; so that a high number means a hard material.

The "ROCKWELL" Hardness Tester accomplishes a test which in principle is represented by this series of sketches

EXPLANATION –

Diagrammatically the cycle of operation of the Rockwell Direct-Reading Hardness Tester is here shown. To illustrate the principle and show the action of the ball under application and release of minor and major loads, the size of the 1/16" ball has been enormously exaggerated.

A-B = Depth of hole made by Minor Load

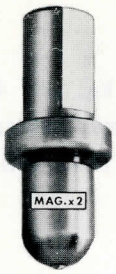
A-C = Depth of hole made by Major Load

D-C = Recovery of metal upon reduction of Major to Minor Load. This is an index of the elasticity of metal under test, and does not enter the hardness reading.

B-D = Difference in depth of holes made = Rockwell Hardness number.

SELECTING PENETRATOR

BALL CHUCK



The 1/16" ball chuck is used for testing brass, bronze, cast iron and soft steel. The ball is held in place by a screw cap, which leaves about 1/3 of the ball exposed for penetration into the specimen. If the ball should be damaged, the cap should be unscrewed, the damaged ball removed, and a new ball put in place. The cap should then be replaced and screwed finger tight to hold the ball.
NOTE: For material too soft to check with the 1/16" ball chuck, 1/8, 1/4 and 1/2 inch ball penetrators can be supplied.

BRALE

The sphero-conical diamond penetrator ("BRALE") must be used when testing hardened tool steel, case hardened steel and heat treated spring steel.

NOTE: The operator should avoid striking the anvil against the "BRALE", as it may break. Striking the steel ball will flatten it.

SELECTING LOAD–NORMAL ROCKWELL.

A 60 kg. weight pan, a 40 kg. weight marked with a red circle, and a 50 kg. weight marked with a black circle permit tests of 60, 100 and 150 kilograms. The weights are made so that they can only be stacked in this order.

The 100 kg. load is usually used with the 1/16" ball chuck for testing soft metals.

The 150 kg. load is usually used with the "BRALE" diamond penetrator for testing hardened steel.

SELECTING LOAD–SUPERFICIAL ROCKWELL.

A 15 kg. weight pan and two 15 kg. weights permit tests of 15, 30 and 45 kilograms.

The 30 kg. load is most commonly used with both the 1/16" ball chuck and the "N BRALE" diamond penetrator. If greater sensitivity is required, or if the surface finish is not the best, then the 45 kg. load should be used, providing the metal is thick enough (or, if case hardened steel is being tested, the hardened case is thick enough to support the load and not break through into the soft core).

When testing thin sheet metal, the readings will be in error if the impression of the penetrator can be seen on the underside of the sheet after making the test. A lighter load should then be used.

The 15 kg. load is used for very thin sheet steel or hardened springs, or very thin hardened cases, such as nitrided cases which are thin and brittle.

Do not use the 15 kg. load if a heavier load can be used.

LIMITATIONS OF PENETRATORS

Diamond "BRALE" Penetrators are intended for hard material only. For metals harder than B-100, the "BRALE" Penetrator and 150 kg. load should be used.

(If you have our "Superficial" tester with major loads of 15 kg., 30 kg. and 45 kg., which is a special tester for testing metal too thin to test on the normal tester, then do not use the steel ball for material harder than 15T-93 or 30T-82 or 45T-72, which are all of the same hardness as B-100).

For metals softer than C-20 use the 1/16" ball and 100 kg. load.

The range of the 1/16" diameter ball penetrator is from B-100 to B-0. When the 1/16" ball is used on materials above B-100 with the 100 kg. load, the ball will flatten. Another reason against this misuse of the "ROCKWELL" is because of the loss of sensitivity which is introduced due to the geometry of the indentation. With shallow penetration there are only small differences of depth in relation to large differences in diameter with a spherical penetrator.

Several investigators have published results of experimental work in which "ROCKWELL" tests have been made on material harder than B-100 in which they have used steel ball penetrators of 1/16" and 1/8" diameter, obtaining readings up to B-100 or B-120. Such readings are not "ROCKWELL" Hardness because all "ROCKWELL" scales stop at 100.

Some investigators have attempted to overcome the flattening of the 1/16" ball when used on hard material by using a 1/8" ball penetrator which is less liable to flatten since the applied load is spread over a greater bearing surface. In using this larger ball on hard material, there is even a greater loss of sensitivity on hard material than with the 1/16" ball.

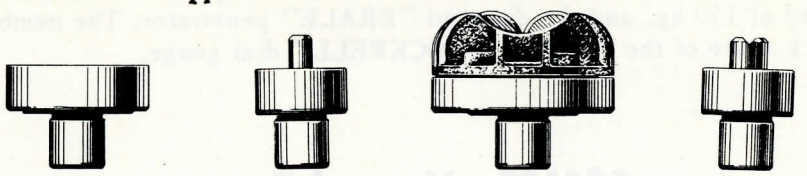
If the 1/16" ball is used on material softer than B-0, there is the danger that the cap of the penetrator, which holds the ball in place, will be resting on the sample, or that the power lever will descend too far and be resting on its stop pin. Below B-0 the 1/16" ball becomes geometrically supersensitive and the readings erratic because errors and effects of inhomogeneity become magnified.

If the hardness of the sample is below B-0, when using the 1/16" ball and 100 kg. load, one of the larger ball penetrators or a lighter load should be used. The smallest ball that can be used to make the test is recommended because of the loss of sensitivity as the size of the penetrator is increased. An exception to this is in testing soft material which is not homogeneous. It may be preferable, in this instance, to use a large ball and thus obtain an average hardness.

No matter what diameter ball penetrator is used, "ROCKWELL" readings should never be taken above B-100 on the dial. The portion of the B scale from B-0 to B-30 is intended for use with soft material only, with a hardness reading less than B-30, and is not intended for use with hard material testing to above B-100.

ANVILS

These four anvils are supplied with each tester.



PLANE anvil should be used in testing flat-bottom pieces.

SPOT anvil with small elevated flat should be used for small pieces, thin pieces or any having bottoms not truly flat. In testing pieces that are not flat, they should be placed on the anvil with the more concave side up to make better contact with the anvil at the point of test.

CYLINDRON JR. anvil with hard, parallel, twin cylinders is used to support round pieces, from 1/4" diameter up to 3" diameter.

SHALLOW V anvil is used for round pieces under 1/4" diameter.

CAUTION: A round piece should never be supported on its cylindrical surface by a flat anvil because of the danger of its rolling out when the major load is applied. This may break the penetrator. An exception to this is where other means are provided which would prevent rolling.

The CYLINDRON anvil which is similar to the CYLINDRON JR., but larger, is used to support pieces from 2" up to 8" diameter.

Many users make special anvils or supports for unusual shapes and sizes. All anvils must be ground flat and true on the undersurfaces which rest upon the top of the elevating screw. The stem that enters the hole in the top of the elevating screw must not fit so tightly as to prevent seating all the way around at the shoulder, and that stem must be ground at a true right angle to the flat bearing surface mentioned.

Care should be taken before placing any anvil in the elevating screw to see that the undersurface, as well as the top of the elevating screw is clean.

When changing anvils, run the elevating screw to a low position and remove the anvil very carefully to avoid striking the penetrator.

A few blows from the hardened anvil, or even a single blow, will do more damage to the penetrator than hundreds of tests on hardened steel. It is recommended that in removing anvils from the elevating screw, one finger be placed across the top of the anvil to form a protection between the anvil and the penetrator.

THIN METAL. Thin soft metal should be tested on the Superficial "ROCKWELL" with a steel ball penetrator and DIAMOND SPOT anvil. If this is not possible then the test must be made on the steel SPOT anvil.

Repeated tests will indent the steel spot anvil in time and cause an error in "ROCKWELL" readings. When pitted it must be relapped. A special lapping jig can be supplied. This is a round plate in which the anvil is fitted with two anvils or dummy pegs to form a three point support. This gives good support on the lapping plate and keeps all three flat.

ROCKWELL HARDNESS NUMBERS.

There are no "ROCKWELL" values shown by numbers alone. Each "ROCKWELL" hardness number is a scale letter and number, for example C 60. The letter "C" indicates a load of 150 kg. and the diamond "BRALE" penetrator. The number 60 is read from the black scale of the NORMAL "ROCKWELL" dial gauge.

SCALES — Normal Tester

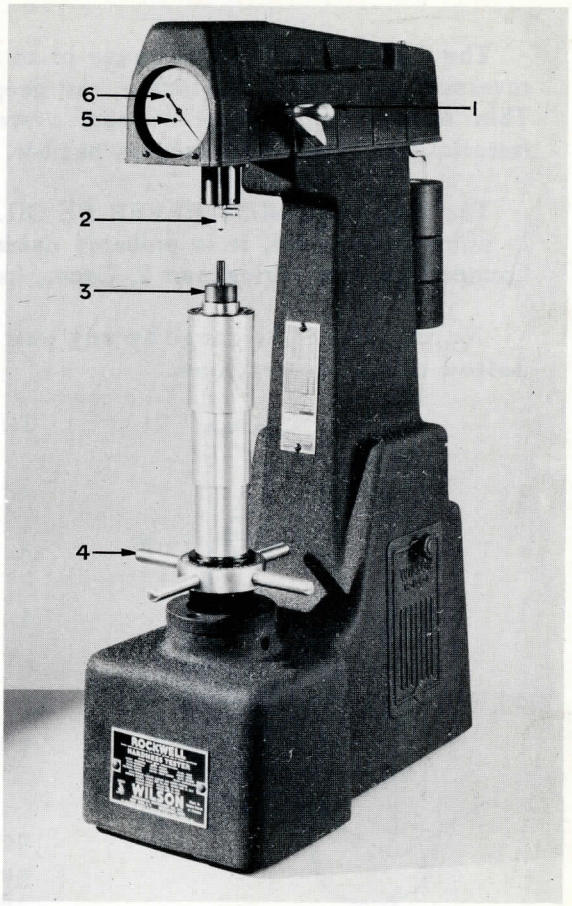
Scale Symbol	Penetrator	Load in Kilograms	Dial Figures
B	**1/16" ball**	**100 kg.**	**Red**
C	**"BRALE"**	**150 kg.**	**Black**
A	"BRALE"	60 kg.	Black
D	"BRALE"	100 kg.	Black
E	1/8" ball	100 kg.	Red
F	1/16" ball	60 kg.	Red
G	1/16" ball	150 kg.	Red
H	1/8" ball	60 kg.	Red
K	1/8" ball	150 kg.	Red
L	1/4" ball	60 kg.	Red
M	1/4" ball	100 kg.	Red
P	1/4" ball	150 kg.	Red
R	1/2" ball	60 kg.	Red
S	1/2" ball	100 kg.	Red
V	1/2" ball	150 kg.	Red

SCALES — Superficial Tester

Scale Symbol	Penetrator	Load in Kilograms
15N	**"BRALE"**	**15 kg.**
30N	**"BRALE"**	**30 kg.**
45N	**"BRALE"**	**45 kg.**
15T	**1/16" ball**	**15 kg.**
30T	**1/16" ball**	**30 kg.**
45T	**1/16" ball**	**45 kg.**
15W	1/8" ball	15 kg.
30W	1/8" ball	30 kg.
45W	1/8" ball	45 kg.
15X	1/4" ball	15 kg.
30X	1/4" ball	30 kg.
45X	1/4" ball	45 kg.
15Y	1/2" ball	15 kg.
30Y	1/2" ball	30 kg.
45Y	1/2" ball	45 kg.

OPERATING INSTRUCTIONS IN BRIEF.

BEFORE STARTING TEST SEE THAT CRANK HANDLE (1) IS PULLED FORWARD COUNTER-CLOCKWISE AS FAR AS IT WILL GO. THIS LIFTS THE POWER ARM AND THE WEIGHTS.



1. Select proper penetrator (2) and insert in the plunger rod.
2. Place proper anvil (3) on elevating screw.
3. Place specimen or test block on the anvil.
4. Raise specimen into contact with the penetrator by turning capstan handwheel (4) clockwise. Continue motion until small pointer (5) is near the dot. Continue until the large pointer (6) is in a vertical position.
5. Turn the bezel of the dial gauge, until the "SET" line is directly behind the large pointer.
6. Release the weights (MAJOR LOAD) by tripping the crank handle rearward. DO NOT FORCE THIS CRANK HANDLE. ALLOW THE DASH-POT TO CONTROL THE SPEED OF TEST.
7. When the large pointer comes to rest return the crank handle to the starting position. This removes the MAJOR LOAD. The MINOR LOAD is still applied.
8. Read the scale letter and "ROCKWELL" number from the dial gauge.
9. Remove the MINOR LOAD by turning the capstan handwheel (4) counter-clockwise to lower the elevating screw and specimen so they clear the penetrator.
10. Remove the specimen.

CAUTIONS TO BE TAKEN WHEN MAKING ANY "ROCKWELL" HARDNESS TEST.

PENETRATOR. Be sure the mating surfaces of the penetrator and the plunger rod are clean and free of dirt, chips and oil; these prevent proper seating and cause a false "ROCKWELL" hardness test. After changing any penetrator or putting a new ball in a ball chuck, or changing the anvil, several tests should be made to seat these parts before any hardness readings are taken.

ANVILS. Be sure the mating faces of the anvil and the end of the elevating screw are clean and free of dirt, chips and oil. These prevent good seating and cause a false "ROCKWELL" hardness test. If the shape of the part is so irregular that it cannot be solidly supported on any of the standard anvils without shifting under application of the MAJOR LOAD, then a special anvil or method of support must be devised.

SPECIMEN. When placing the test specimen on the anvil, be sure it is supported solidly. Any loose scale, coarse tool marks, nicks or burrs which might make contact with the anvil will cause a false test, by collapsing under the MAJOR LOAD and thus allowing the work to move.

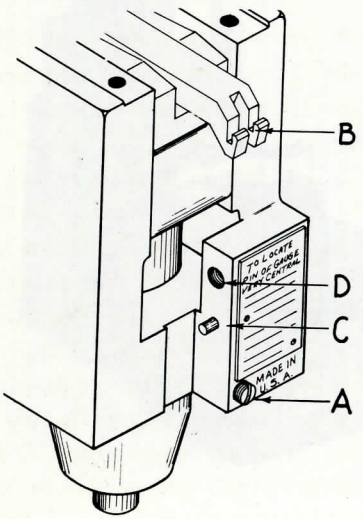
Loose or flaking scale where the penetrator makes contact with the specimen may chip away and cause a false test. This must be filed or ground away. Decarburized surface metal must be filed away to permit the penetrator to start the test in the good metal underneath.

DIAL GAUGE

The "ROCKWELL" dial gauge is an accurate direct reading micrometer gauge with a reversed scale. With this scale, the deeper the indentation, the lower the dial reading. This follows the concept of most systems of hardness measurements; the harder the material, the bigger the hardness number. Softer materials show a lower hardness number.

The dial gauge MUST NEVER BE OILED. If the stem of the gauge will not drop freely after being lifted, it is probably damaged and must be returned to the factory at 929 Connecticut Ave., Bridgeport 2, Conn., for repair or replacement.

Never handle the gauge by any part but the case. If the gauge must be removed, follow these instructions:



1. Remove cowl. cowl
2. Remove clamp screw "D."
3. Slide gauge off dowl pin "C."
4. Lift gauge to disengage cross pin from slot "B."

The gauge is replaced in position by reversing these directions.

If the same gauge is replaced, position screw A need not be changed. If another gauge is replaced, then screw A will need adjusting so it will be in contact with the back of the case when cross pin is centered in slot B of the index lever. Any change of the gauge requires adjustment of the index lever adjusting screw. (See "Index Lever Adjustment").

The gauge has been tested for extreme accuracy thru one working revolution and tests should not be made in which the depth of penetration exceeds one revolution. If the penetration exceeds one revolution, the "BRALE" should be changed for a ball penetrator, or if a ball is being used, a lighter load or a larger ball should be used to keep the readings within one revolution of the gauge.

The Normal gauge is marked with two scales, one printed black and the other red. The black scale is read when the "BRALE" is used to make the test. The red scale is read when the test is made with a ball penetrator, no matter what size. One revolution of the Normal gauge equals a depth of 0.2mm. (.008")

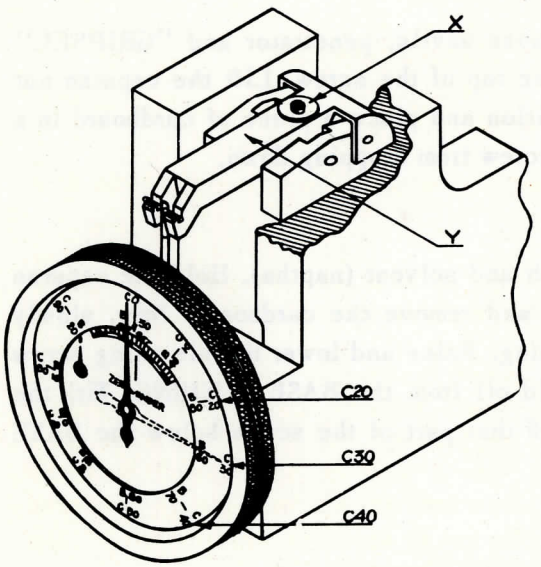
The Superficial gauge has one 0-100 scale read for all tests. One revolution of the Superficial gauge equals a depth of 0.1mm. (.004")

The "SET" line of the red scale is at 30 instead of 0. This was done to avoid readings below zero on very soft materials which would require a negative symbol and perhaps cause confusion.

INDEX LEVER ADJUSTMENT.

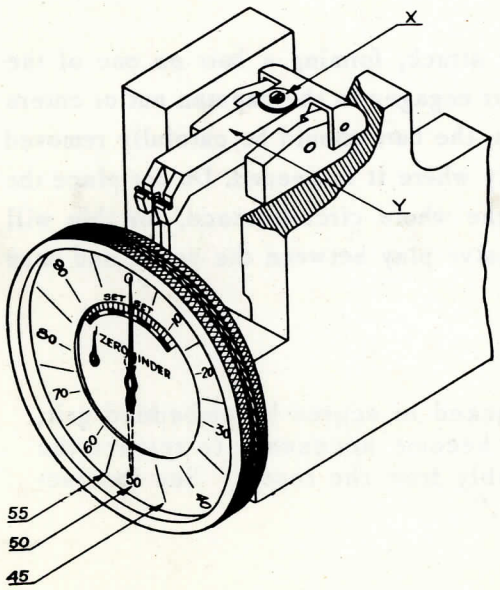
The purpose of this adjustment is to prevent contacting the MAJOR LOAD when applying the MINOR LOAD. Any hard bump against the penetrator might cause the adjustment to change. Check the setting of the hands of the gauge by first making sure the crank handle at the right of the head is in the forward position. Place a test piece on the anvil and raise the elevating screw until the work contacts the penetrator. Continue upward movement until a firm resistance is felt. At this time the MINOR LOAD is fully applied and the MAJOR LOAD is now contacted.

NORMAL "ROCKWELL" TESTER.



The proper setting of the gauge pointers when the MAJOR LOAD has been contacted is with the small pointer just past the dot and the large pointer between C 20 and C 40 (C 30 is best). If these pointers are not at this position remove the cowl, loosen knurled lock nut and screw X. Turn the screw counter-clockwise until the pointers stop moving. Now turn the screw clockwise until both pointers are vertical. Turn the gauge bezel until the "SET" line is directly back of the large pointer. Turn screw X further until the large pointer is near C 30. Hold the screw with the screw driver and tighten the knurled lock nut just finger tight.

SUPERFICIAL "ROCKWELL" TESTER.



The proper setting of the gauge pointers when the MAJOR LOAD has been contacted is with the small pointer just past the dot and the large pointer between 45 and 55 (50 is best). If the pointers are not at this position remove the cowl, loosen knurled lock nut and screw X. Turn the screw counter-clockwise until the pointers stop moving. Now turn the screw clockwise until both pointers are vertical. Turn the gauge bezel until the "SET" line is directly back of the large pointer. Turn screw X further until the large pointer is near 50. Hold the screw with the screw driver and tighten the knurled lock nut just finger tight.

ELEVATING SCREW

THE ELEVATING SCREW IS CLOSELY FITTED TO THE BASE BUSHING. To keep it moving freely, it should be cleaned and oiled frequently with EEL SKID OIL. Do not allow dirt or chips to become embedded in the screw threads or the top surface of the screw where the anvil seats.

A TELESCOPING PROTECTIVE SLEEVE for the top portion of the screw is available. Another tube is available to cover the bottom of the screw. These covers protect the screw threads from dust, grit and nicks which may cause it to jam.

For regular cleaning of elevating screw, remove anvils, penetrator and "GRIPSEL" penetrator screw. Unscrew the capstan nut to the top of the screw. Lift the capstan nut to raise the elevating screw to the highest position and place a piece of cardboard in a thread just above the base bushing to keep the screw from dropping down.

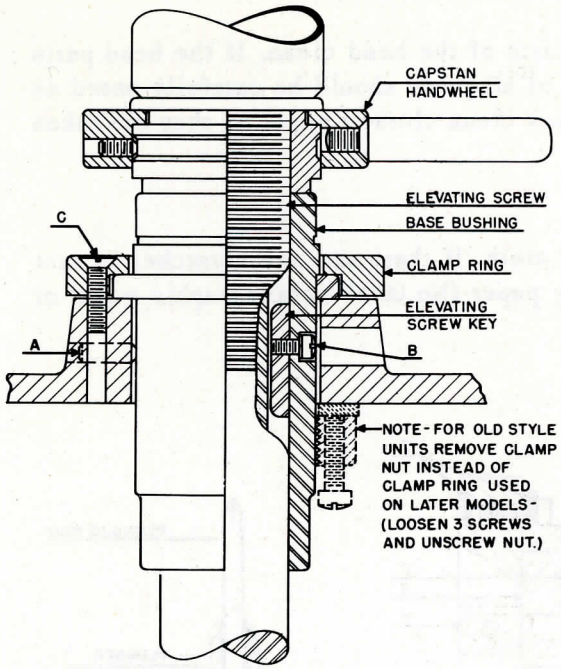
Clean the exposed threads with a clean brush and solvent (naptha). Hold the capstan nut to keep the elevating screw from dropping and remove the cardboard. Now, slowly lower the elevating screw through the base bushing. Raise and lower the elevating screw in this manner a few times to work dirt and old oil from the BASE BUSHING. With the elevating screw in the lowest position, brush off that part of the screw below the BASE BUSHING with clean solvent.

Be sure the threads in the capstan nut are clean, and that dirt, dried oil or chips have been removed from the mating faces of the capstan nut and BASE BUSHING.

Sometimes the elevating screw is accidentally struck, forming a burr on one of the threads. When the screw is lowered so that this burr engages in the capstan nut or enters the base bushing, the screw binds. To correct this, the burr should be carefully removed with a fine file, being sure that the file is used only where it is needed. Do not place the screw in a lathe and file, grind or emery paper the whole circumference, for this will reduce the diameter of the screw and cause excessive play between the screw and base bushing, causing poor hardness tests.

If the elevating screw should be badly nicked or scored by embedded grit, causing it to jam in the base bushing, it may become necessary to remove the whole elevating screw and base bushing assembly from the tester. See instructions for "Disassembling The Elevating Screw."

DISASSEMBLING THE ELEVATING SCREW.


CAPSTAN HANDWHEEL
ELEVATING SCREW
BASE BUSHING
C
CLAMP RING
ELEVATING SCREW KEY
A
B
NOTE- FOR OLD STYLE UNITS REMOVE CLAMP NUT INSTEAD OF CLAMP RING USED ON LATER MODELS- (LOOSEN 3 SCREWS AND UNSCREW NUT.)

1. Remove the protective sleeve.
2. Remove the anvil.
3. Remove the capstan handwheel.
4. Loosen front 2 screws A.
5. Remove 3 screws C.
6. Remove clamp ring.
7. Lift the base bushing and elevating screw unit from the tester.
8. Remove key screw B.
9. Clean the elevating screw with clean solvent (naptha).
10. Remove the elevating screw from the base bushing.

NOTE: Be careful to note the position of the key as it must be replaced in the same position.

Replace the elevating screw and base bushing by reversing these directions. Oil the elevating screw with EEL SKID oil.

CENTERING VEE ANVIL AND PENETRATOR.

Tighten screws C in the clamp ring and then loosen them about ½ turn. It should be possible to move the base bushing without too much pressure from the centering screws A.

Check the centering of the small vee anvil and the "BRALE" penetrator with a small round rod, about ¼" diameter by ¾" long. Place the rod in the vee and raise the elevating screw until the "BRALE" makes a small impression (raise against the "BRALE" until the hand moves about 10 points on the dial). Now lower the elevating screw until the "BRALE" is clear of the rod. Carefully turn the vee anvil, without disturbing the rod, about 180 degrees (½ turn). Make another small indentation. Remove the rod and examine it with a strong magnifying glass. If there is only one indentation showing the elevating screw and penetrator are centered. If two indentations show the elevating screw must be moved by tightening the proper screws A.

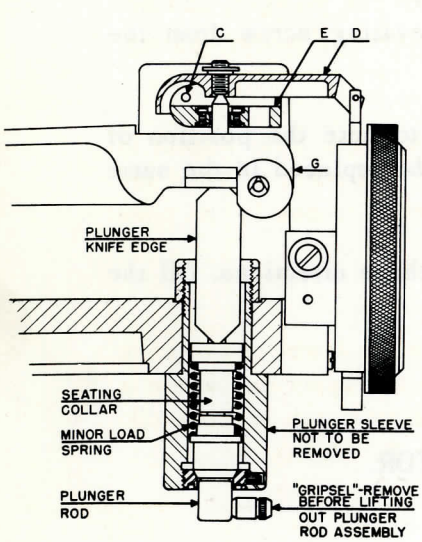
Repeat the positioning of the elevating screw and checking for center by making the indentations in the rod until only one indentation can be seen.

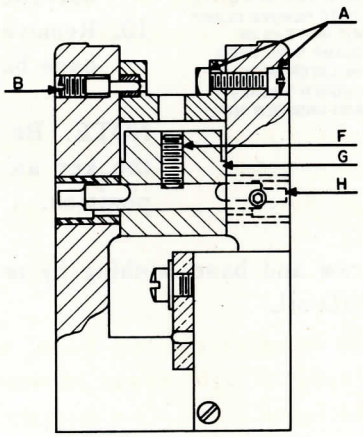
Tighten screws C tight and recheck to see whether the elevating screw has moved.

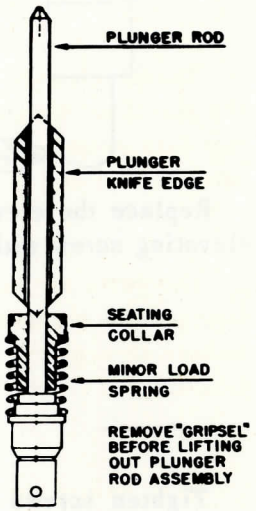
DISASSEMBLING HEAD PARTS.

CAUTION: It is very important to keep all parts of the head clean. If the head parts should be removed for any reason the positions of all parts should be carefully noted as they are removed and they should be laid only on a clean cloth or paper as they are taken out.

Clean only with a good solvent and lint free cloth. If there are any scratches or rust these must be removed using the best polishing paper (No.0000 metallographic paper or crocus cloth).







PLUNGER ROD ASSEMBLY

To disassemble the "ROCKWELL" head follow these directions in this order.

1. Remove the weights, weight pan, penetrator, "GRIPSEL" penetrator screw and anvil.
2. Remove the cowl.
3. Remove in order two screws and nuts A (from both sides of the head), screw B, Index lever pin C, Index lever D and Index guide block E.
4. Loosen fulcrum knife edge screw F and press down on power lever G.
5. Push fulcrum knife edge H sideways thru the head and remove.
6. With the fulcrum knife edge removed, the power lever G can be removed.
7. Lift the plunger rod assembly from its position as a unit.
8. Carefully note the position of the parts of the plunger rod assembly before taking it apart as all these parts must be replaced in their original positions.

NOTE: The plunger sleeve is never removed from the tester.

CLEANING HEAD PARTS

All the parts should be wiped free from fluff or grit with a clean rag; if any oil has gummed or dried, it should be removed by washing the part in gasoline or benzine. If there is rust on the plunger, it should be removed by polishing with crocus cloth or No. 0000 metallographic polishing paper.

Examine the lower face of the plunger and see that no chips are embedded in the steel and that there are no marks or projections which might prevent the proper seating of the penetrator. If this contact face is very dirty or rusty, it should be carefully drawn across a piece of fine blue back emery paper several times upon a flat surface. Do not use coarse emery or a file. At this point it would be well to examine the shoulders of the penetrators, where they make contact with the lower face of the plunger, and see that they are free from embedded chips or anything which would prevent a proper seating.

Having cleaned the removable head parts, the plunger sleeve which must remain in the machine, should be cleaned. Wind a clean rag around the end of a piece of wood and ram this down into the sleeve. See that no dirt remains on the ledge formed by the cone at the lower end of the sleeve.

The parts are now ready to be re-assembled. First, wipe clean the lower end or cone face of the plunger rod and apply a light smear of watch oil on the upper end where it passes through the hole in the index block. Use only the best quality watch or clock oil. UNDER NO CONDITIONS SHOULD COMMON LUBRICATING OIL BE USED.

After oiling the plunger, replace on it the minor load spring without up-ending or turning it from its original position, then the seating collar and the plunger knife edge. This plunger assembly is now held by the top of the plunger and lowered into the plunger sleeve. Bring the power lever into position and move it backward and forward very gently to work the plunger knife edge into its proper groove seatings, top and bottom.

The remainder of the assembly is merely a reversal of the taking down operation; the power lever is pressed down while the fulcrum knife edge is inserted with the letter "L" at the left and the word "FRONT", as indicated. Before inserting fulcrum knife edge, be sure that the power lever is raised by seeing that the crank handle is in its forward position.

Put the index block and lever in place and push the index block pin through till it finds all the holes, then gently tap it all the way through. Next, replace the dowel guide screw and the two index block screws and nuts, and cowl. Check the index lever adjustment described under "Index Lever Adjustment".

FINDING AND CORRECTING TROUBLE

CALIBRATED TEST BLOCKS may be purchased from us. The tester should be checked regularly by means of these blocks; especially if it is suspected that the tester is not reading correctly. (Do not use a test block which has had the old impressions ground off. Such a block will be uneven in hardness. There is no certainty that the new surface will be the same hardness as the original surface.) These tests will prove the accuracy of the tester or indicate trouble with the penetrator, the tester or dial gauge through incorrect readings.

If the following suggestions fail to locate and rectify the trouble, a letter should be written to us at 230 Park Ave., New York 17, N.Y., giving as much detail as possible, an account of the trouble that exists. Quote figures when possible. This will help us to suggest possible remedies and may prevent the necessity of returning the tester to the factory.

SPEED OF TEST: The correct speed at which to apply the MAJOR LOAD IS from four to five seconds. For production testing, where speed is important, this time may be slightly less, but when the speed reaches two seconds or faster there is a sudden drop of the load on the penetrating point instead of a gradual application; this causes a deeper penetration, and if the diamond penetrator is being used, great danger of breaking it exists.

DASH-POT: The Speed is controlled by the oil dash-pot, which is regulated by adjusting the needle valve. If too much oil is put into the dash-pot it will force out until the proper level is reached. If there is a sudden drop of the load when starting a test, more oil is needed. The proper level is about 3/4 inch from the top of the pot.

IF, WHEN APPLYING THE MINOR LOAD, THE SMALL POINTER OF THE INDICATING GAUGE CANNOT BE BROUGHT TO A VERTICALLY UPRIGHT POSITION, first look to the handle at the right of the head and see that it is in its forward position. Remove head cowl. Look to the top of the dial gauge stem and see that the small cross-pin does not bind in the slot of the index lever, which operates the Dial Gauge. If there is a binding, determined by lifting the index lever and allowing it to drop back into position, the screws which hold the gauge in place should be loosened and the gauge re-adjusted. See "Dial Gauge". Tighten the screws, making allowance for the fact that this tightening may tilt the gauge. If, after checking above, the small pointer of the gauge still cannot be brought vertically upright, then it will be necessary to turn the adjusting screw in the index lever, as explained under "Index Lever Adjustment".

IF THE DIAL GAUGE IS AT FAULT. If, when the stem is raised with the finger, it does not return freely, but binds or sticks, it should be removed from the machine and returned to us at 929 Connecticut Ave., Bridgeport 2, Conn., for repairs.

WRONG LOAD AND PENETRATOR. Sometimes the wrong load is employed; therefore, be sure the correct penetrator and load are in place. Also remember that no matter what penetrator and load are used, you must "SET" the bezel of the dial, after the minor load is applied. See engraved chart on the front of the "ROCKWELL" pedestal for LOAD and PENETRATOR and SCALE symbols.

IF LOW READINGS ARE OBTAINED. This may be due to a broken diamond ("BRALE") penetrator. Remove "BRALE" and examine the point with a strong magnifying glass. If it is broken, it should be returned for replacement. If there is any doubt as to whether or not it is broken, return it to us for our examination.

If the tester, while the load is on, is subjected to vibration, too deep penetration and low readings will result.

Low readings may be caused by dirt, metal chips or any foreign matter which comes between the seat of the anvil and the top of the elevating screw or between the shoulder of the penetrator and the lower face of the plunger rod. Dirt, loose scale, nicks or burrs and tool marks between the piece tested and the anvil, will compress under application of the major load and give a low reading.

The fit of the anvil stem into the elevating screw hole must not be too close. It should be free enough so that when the anvil is lifted it will drop into place without being forced.

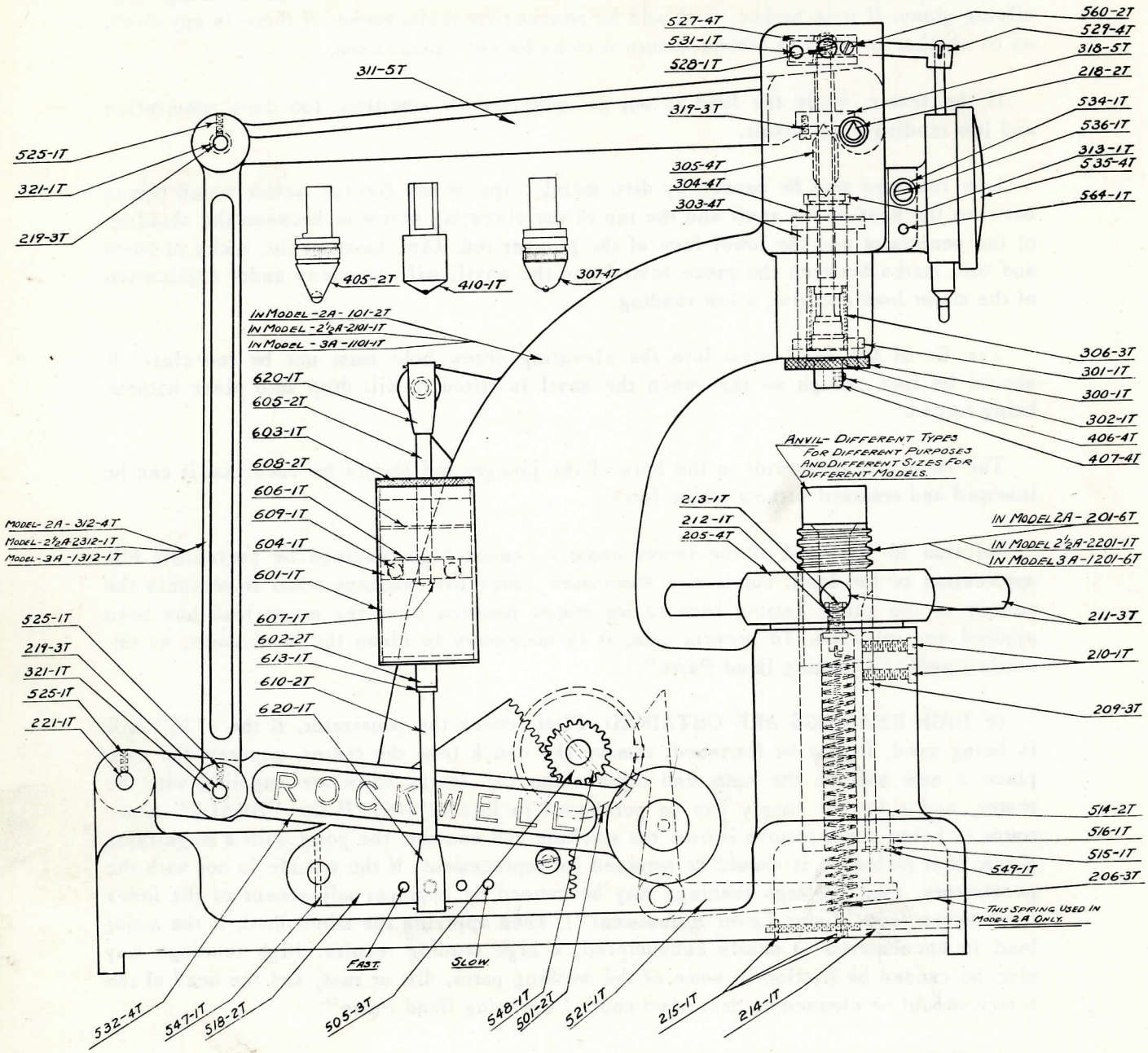
The fit of the penetrator in the hole of the plunger rod should be such that it can be inserted and removed without undue force.

Friction in the head of the tester usually causes high readings by preventing full application of the load, but it may sometimes cause low readings when it prevents the pointer of the gauge coming back to its proper position after the major load has been applied and released. To prevent this, it is necessary to clean the head parts, as described under "Cleaning Head Parts".

IF HIGH READINGS ARE OBTAINED. First, check the penetrator. If the 1/16" ball is being used, it may be flattened; remove the chuck from the tester, unscrew the cap, place a new ball on the stem and replace the cap (extra balls are supplied with the tester, and a further supply can be purchased in lots of 100). If the "BRALE" penetrator is being used, remove it from the machine and examine the point with a magnifying glass; if it is broken it should be returned for replacement. If the trouble is not with the penetrators, then the high readings may be caused by improper adjustment of the index lever screw (see "Index Lever Adjustment"). When applying the minor load, if the major load is encountered or nearly encountered, a high reading results. High readings may also be caused by friction in some of the working parts, dirt or rust, and the head of the tester should be cleaned as described under "Cleaning Head Parts".

IF THE READINGS ARE NON-UNIFORM. This is probably due to non-uniformity in the piece being tested and before deciding that the tester itself is at fault, tests should be made upon the standard test blocks supplied. It is important that the underside of the test piece, where it comes in contact with the anvil, be free from dirt, grit, loose scale or any projections which would flatten out as the major load is applied. If these exist and it is not practicable or desirable to remove them by smoothing the under surface, make a preliminary test with a small block placed between the penetrator and the work and apply the MAJOR LOAD. The block is then removed and the test made on the work in the usual way.

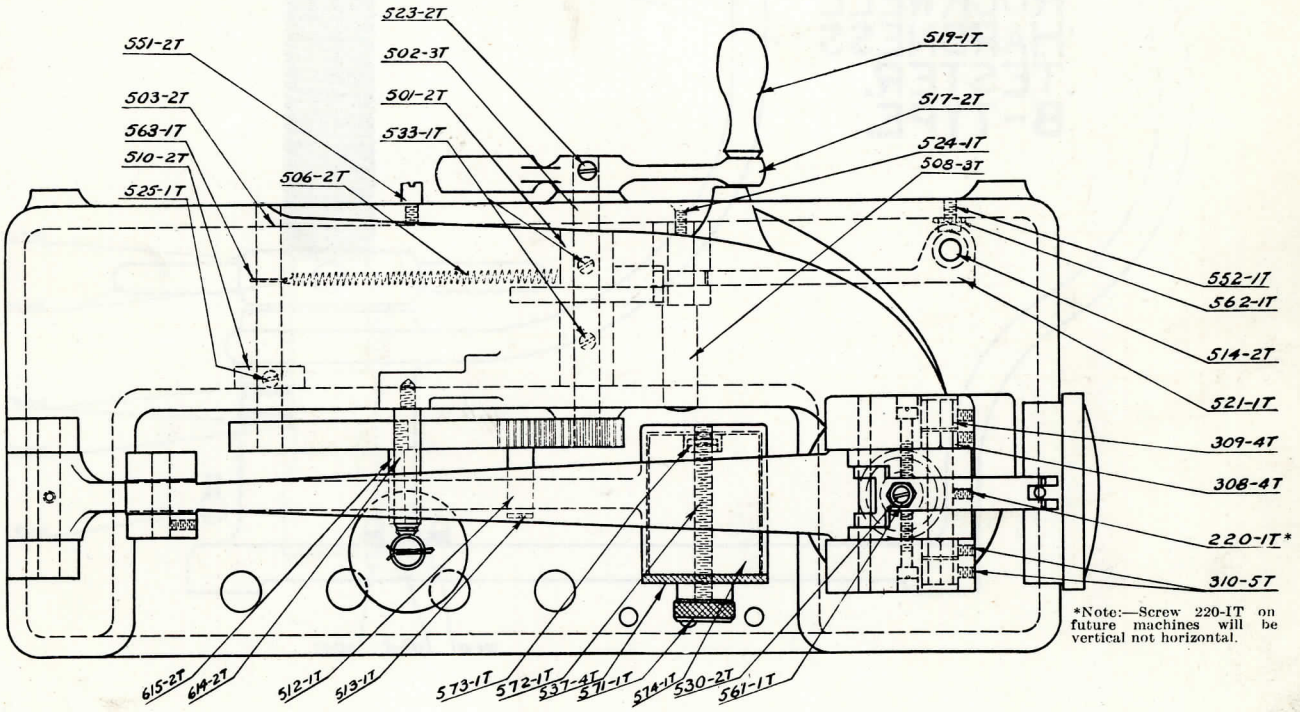
Model A "Rockwell" Hardness Tester



Model A "Rockwell" Hardness Tester

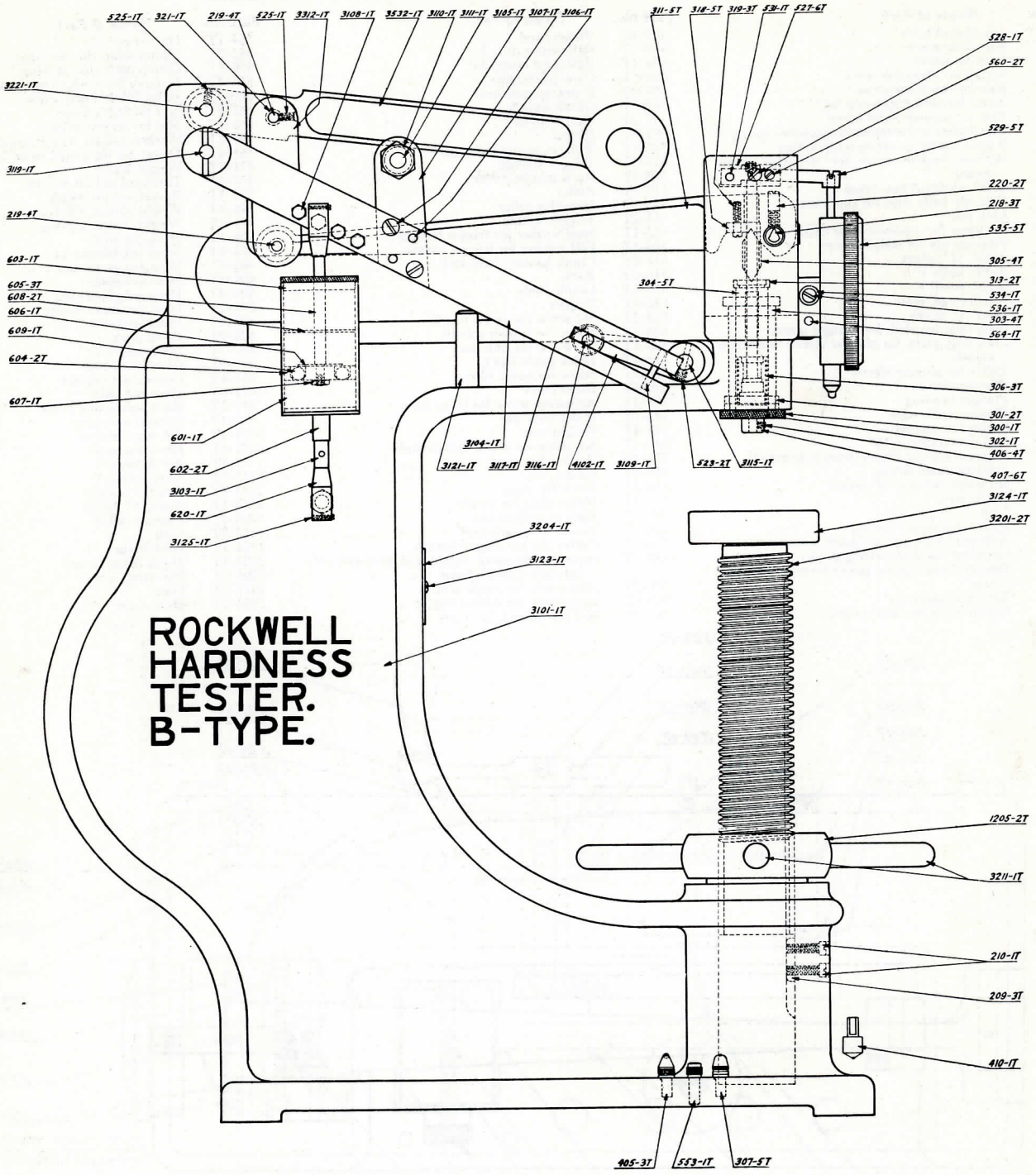
Hardness Tester Part Numbers and Names

Part No.	Name of Part
101–2T	2-A Main Frame
201–6T	Elevating screw
205–4T	Capstan wheel
206–3T	Spring for elevating screw
209–3T	Key for elevating screw
210–1T	Screw for elevating screw key
211–3T	Pins for capstan hand wheel
212–1T	Top anchor screw for elevating screw spring
213–1T	Round nut for elevating screw spring
214–1T	Bottom anchor screw for elevating screw spring
215–1T	10/32 standard nut, brass
218–2T	Fulcrum knife edge for top lever
219–3T	Link pin
220–1T	Set screw for top lever knife edge
221–1T	Fulcrum pin for weight lever
230–1T	Anvil, ¼", plain
231–1T	Anvil, large V
232–1T	Anvil, small V
233–1T	Anvil, large, plain
234–1T	Anvil, 1" bevel
300–1T	Lock ring, knurled, for plunger sleeve
301–1T	Lock ring, plain, for plunger sleeve (*never to be moved*)
302–1T	Collar for plunger sleeve
303–4T	Plunger sleeve
304–4T	Plunger bushing
305–4T	Plunger knife edge
306–3T	Spring for plunger
307–4T	Ball penetrator, 1/16"
308–4T	Fulcrum bearing sleeve (*never to be moved*)
309–4T	Fulcrum guide sleeve
310–5T	Set screw (*never to be moved*)
311–5T	Power lever
312–4T	Link
313–1T	Ring for plunger bushing
318–5T	Notched bearing plate (*never to be moved*)
319–3T	Screw for notched bearing plate
321–1T	Bearing bushings for power lever and weight arm
405–2T	Ball penetrator, ⅛"
406–4T	Clamp screw for penetrators
407–4T	Plunger rod
408–1T	Ball penetrator, ¼"
409–1T	Ball penetrator, ½"
410–1T	Cone penetrator
501–2T	Crank spindle hub
502–3T	Crank spindle
503–2T	Rack spindle
505–3T	Pinion
506–2T	Tension spring for trigger
508–3T	Trigger spindle
510–2T	Rack spindle collar
512–1T	Roller
513–1T	Screw for roller
514–2T	Trigger button
515–1T	Steel washer for trigger button
516–1T	Felt washer for trigger button
517–2T	Crank handle (balanced)
518–2T	Rack
519–1T	Crank knob
521–1T	Trigger
523–2T	Set screw for crank handle
524–1T	Screw for trigger spindle
525–1T	Set screw for link pins
527–4T	Index guide block
528–1T	Screw for index block
529–4T	Index lever
530–2T	Adjusting screw for index lever
531–1T	Index lever pin
532–4T	Weight arm
533–1T	Set screw for crank spindle hub
534–1T	Washer for gauge
535–4T	Gauge, 3½"
536–1T	Screw for gauge
537–4T	Name plate for weight
547–1T	Rack to spindle pin
548–1T	Pinion to spindle pin
549–1T	Cotter pin for trigger button
550–1T	Screw for clamping weight arm, *to be used only but always for shipment*
551–2T	Stop screw for crank arm
552–1T	Stop screw for release trigger
553–1T	Box for extra 1/16" balls
554–1T	Dust cover
555–2T	Clamp strap (for packing)
556–1T	Clamp bolts (for packing)
557–2T	Dummy knife edge (for packing)
560–2T	Index block dowel screw
561–1T	Nut for index lever
562–1T	Nut for release trigger
563–1T	Washer, trigger tension spring
564–1T	Dowel pin for gauge, same as 548–1T
571–1T	Weight knob
572–1T	Threaded rod for weight
573–1T	Round nut for weight
574–1T	Weight, brass, 150 k.g.
575–1T	Weight, brass, 100 k.g.
601–1T	Dash pot tube
602–2T	Dash pot bottom cap
603–1T	Dash pot screw cap
604–1T	Dash pot piston
605–2T	Dash pot piston rod
606–1T	Dash pot ball retainer
607–1T	Piston rod nut
608–2T	Baffle plate
609–1T	Steel ball, 9/32"
610–2T	Connecting rod
613–1T	Connecting rod nut
614–2T	Dash pot pillar
615–2T	Rack connecting pillar
620–1T	Connection sleeve
1101–1T	3-A Main Frame
1201–6T	Elevating screw
1231–1T	Anvil, large V
1232–1T	Anvil, small V
1233–1T	Anvil, 2", plain
1234–1T	Anvil, 1", bevel
1205–1T	Capstan wheel
1312–2T	Link
1554–1T	Dust cover
2101–1T	2½-A Main Frame
2201–1T	Elevating screw
2312–1T	Link
2554–1T	Dust cover



*Note:—Screw 220-1T on future machines will be vertical not horizontal.

Model B "Rockwell" Hardness Tester



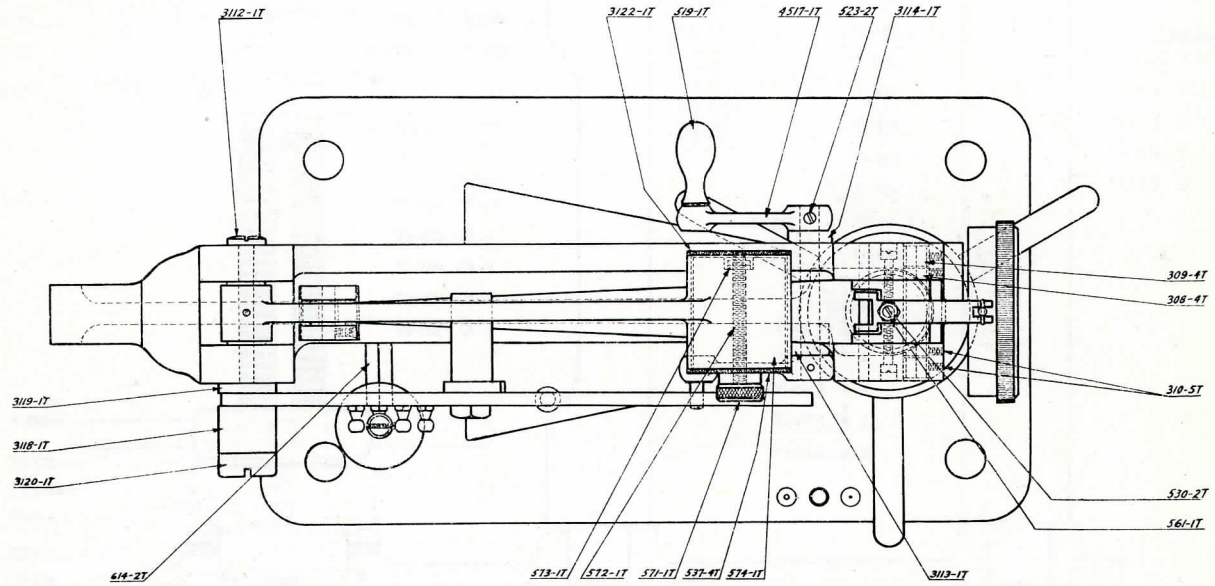
Model B "Rockwell" Hardness Tester

Hardness Tester Part Numbers and Names

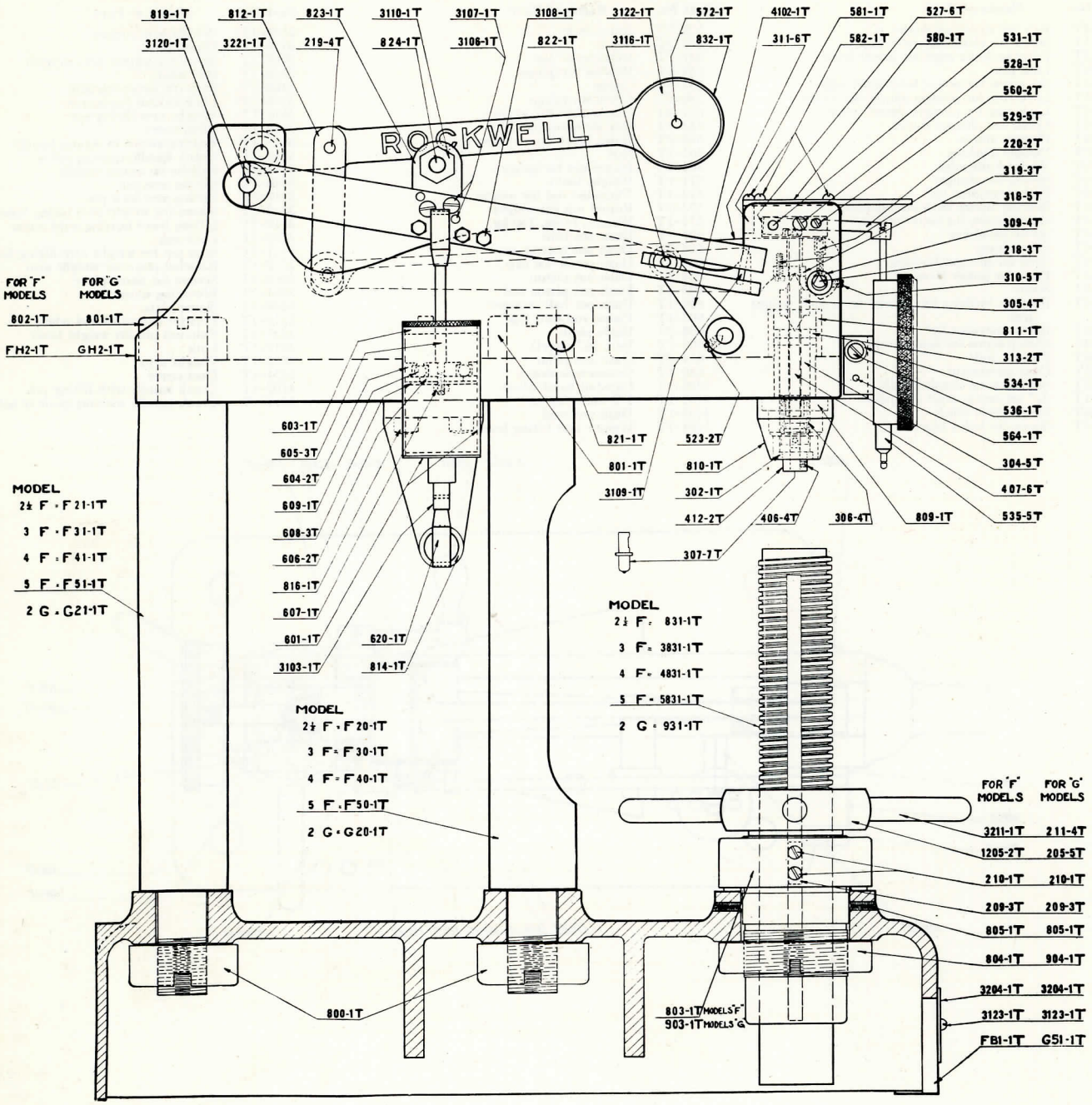
Part No.	Name of Part
209–3T	Key for elevating screw
210–1T	Screw for elevating screw key
218–3T	Fulcrum knife edge for power lever
219–4T	Link pin
220–2T	Set screw for power lever knife edge
300–1T	Lock ring for plunger sleeve (knurled)
301–2T	Lock ring for plunger sleeve (plain)
302–1T	Collar for plunger sleeve
303–4T	Plunger sleeve
304–5T	Plunger bushing
305–4T	Wedge knife edge
306–3T	Spring for plunger
307–5T	Ball penetrator 1/16"
308–4T	Bearing sleeve for lever fulcrum
309–4T	Guide sleeve for lever fulcrum
310–5T	Screw for sleeve
311–5T	Power lever
313–2T	Ring for plunger bushing
318–5T	Plate for power lever
319–3T	Screw
321–1T	Bearing bushing for power lever and weight arm
405–3T	Ball penetrator, 1/8"
406–4T	Clamp screw for penetrators
407–6T	Plunger rod
410–1T	Cone penetrator
523–2T	Set screw for crank handle
525–1T	3/8" set screw, steel cup point
527–6T	Index guide block
528–1T	Screw for index block

Part No.	Name of Part
529–5T	Index lever
530–2T	Screw
531–1T	Index lever pin
534–1T	Washer for gauge
535–5T	Gauge
536–1T	Screw for gauge
537–4T	Name plate for weight
553–1T	Box for extra balls
560–2T	Index block dowel screw
561–1T	Nut
564–1T	Dowel pin for gauge
571–1T	Weight knob
572–1T	Threaded rod for weight
573–1T	Round nut for weight
574–1T	Weight, brass, 150 kg.
601–1T	Dash pot tube
602–2T	Dash pot bottom cap
603–1T	Dash pot screw cap
604–2T	Dash pot piston
605–3T	Dash pot piston rod
606–1T	Dash pot ball retainer
607–1T	Piston rod nut, 10/32"
608–2T	Baffle plate
609–1T	Ball, 3/32" (steel)
614–2T	Dash pot pillar
620–1T	Connection sleeve
1205–2T	Capstan hand wheel
3101–1T	3-B main frame
3103–1T	Dash pot stud
3104–1T	Weight arm lifting lever

Part No.	Name of Part
3105–1T	Weight arm support
3106–1T	Dowel pins
3107–1T	Screw for weight arm support
3108–1T	Ball joint
3109–1T	Stop pin for crank arm
3110–1T	Lock nut for lifting pin
3111–1T	Weight arm lifting pin
3112–1T	Blind screw
3113–1T	Bearing sleeve for crank handle
3114–1T	Crank handle spacing collar
3115–1T	Spindle for crank handle
3116–1T	Lifting arm pin
3117–1T	Lifting arm lock pin
3118–1T	Sleeve for weight arm lifting lever
3119–1T	Lifting lever bearing stud screw
3120–1T	Lock nut
3121–1T	Stop pin for weight arm lifting lever
3122–1T	Knurled plate for weight arm
3123–1T	Screws for name plate
3201–2T	Elevating screw
3204–1T	Name plate
3211–1T	Pins for capstan hand wheel
3221–1T	Fulcrum pin for weight lever
3312–1T	Link
3532–1T	Weight arm
3554–1T	Dust cover
4102–1T	Crank handle with lifting pin
4517–1T	Crank handle without counter balance



Models F and G "Rockwell" Hardness Testers



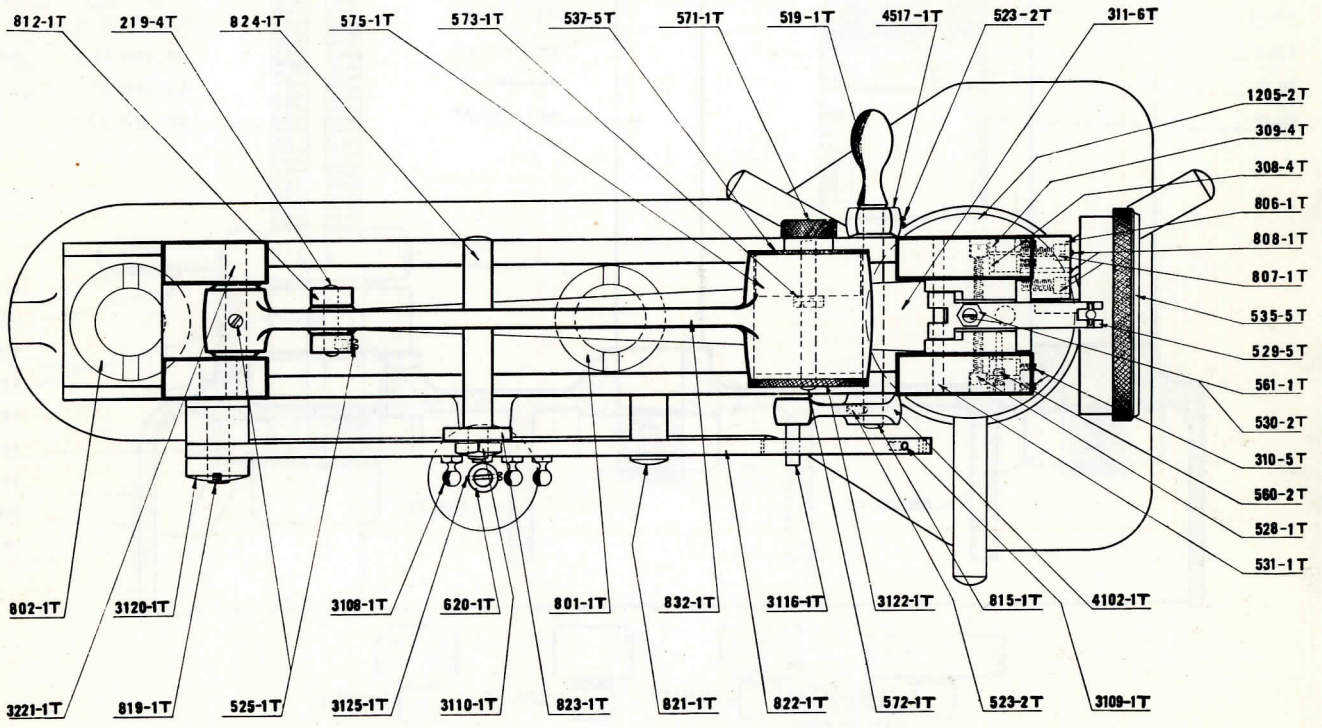
Models F and G "Rockwell" Hardness Testers

Rockwell Hardness Tester Part Numbers and Names

Part No.	Name of Part
GB1–1T	Model G base
FB1–1T	Model F base
GH2–1T	Model G head
FH2–1T	Model F head
G20–1T	Front pillar for Model 2G
F20–1T	Front pillar for Model 2½F
G21–1T	Back pillar for Model 2G
F30–1T	Front pillar for Model 3F
F40–1T	Front pillar for Model 4F
F50–1T	Front pillar for Model 5F
F21–1T	Back pillar for Model 2½F
F31–1T	Back pillar for Model 3F
F41–1T	Back pillar for Model 4F
F51–1T	Back pillar for Model 5F
205–5T	Capstan hand wheel
209–3T	Key for elevating screw
210–1T	Screw
211–4T	Pin for capstan hand wheel
218–3T	Fulcrum knife edge for power lever
219–4T	Link pin
220–2T	Set screw for power lever knife edge
231–1T	Anvil, deep V, ½" Shank
232–1T	Anvil, shallow V, ½" Shank
233–1T	Anvil, large, plane, ½" Shank
234–1T	Anvil, 1", spot, ½" Shank
302–1T	Collar for plunger sleeve
304–5T	Plunger bushing
305–4T	Wedge knife edge
306–4T	Spring for plunger
307–7T	Ball penetrator 1/16"
308–4T	Bearing sleeve for lever fulcrum, (*never to be moved*)
309–4T	Guide sleeve for lever fulcrum
310–5T	Screw for sleeve, (*never to be moved*)
311–6T	Power lever
313–2T	Ring for plunger bushing
318–5T	Plate for power lever, (*never to be moved*)
319–3T	Screw for plate
405–2T	Ball penetrator, ⅛"
406–4T	Clamp screw for penetrators
407–6T	Plunger rod
408–1T	Ball penetrator, ¼"
409–1T	Ball penetrator, ½"
410–1T	Cone penetrator

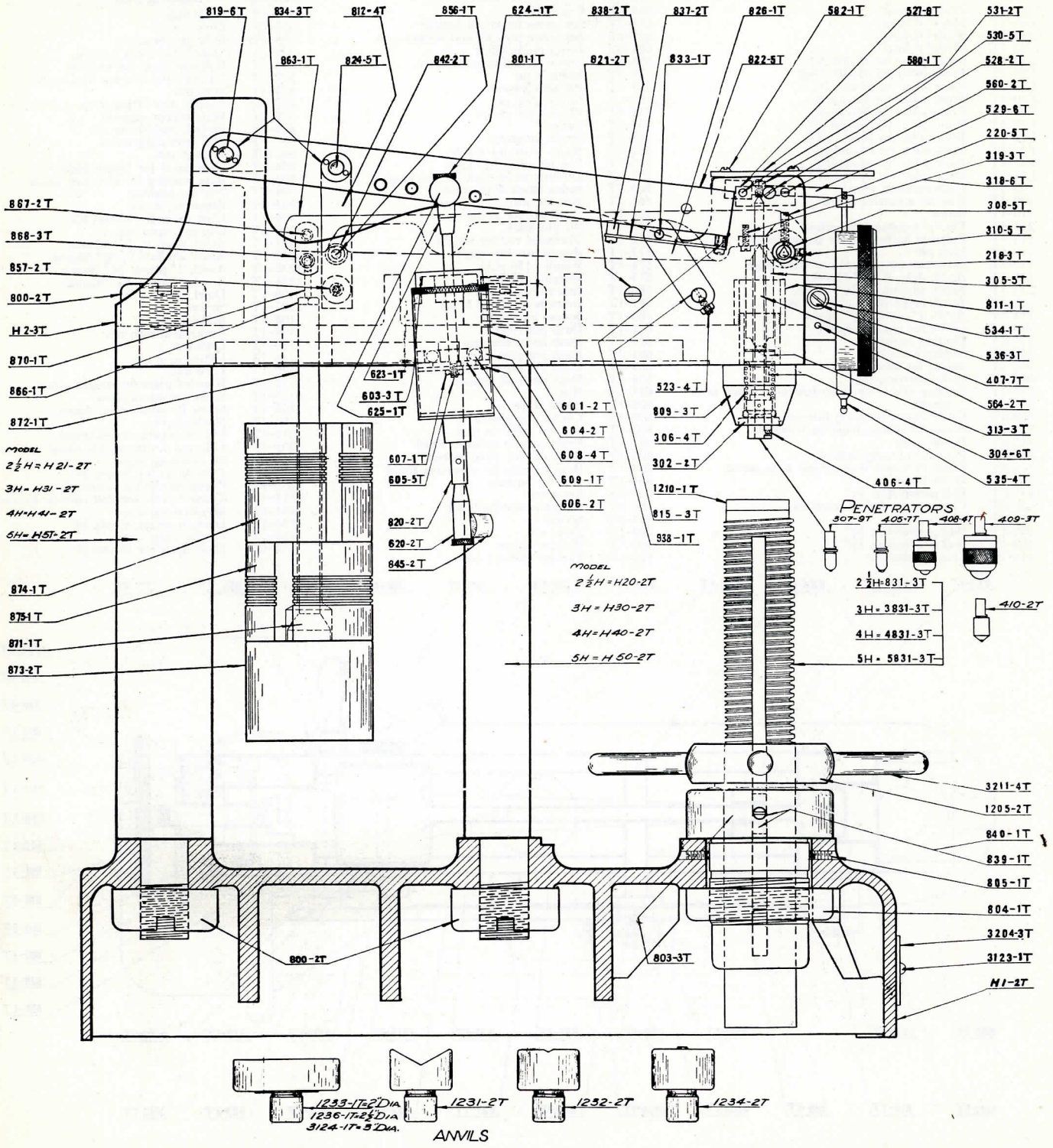
Part No.	Name of Part
519–1T	Crank knob
523–2T	Set screw for crank handle
525–1T	Set screw for link and weight arm
527–6T	Index guide block
528–1T	Screw for index guide block
529–5T	Index lever
530–2T	Adjusting screw
531–1T	Index lever pin
534–1T	Washer for gauge
535–5T	Gauge
536–1T	Screw for gauge
537–5T	Name plate for weight
553–1T	Box for extra 1/16" balls
557–2T	Dummy knife edge (for packing)
560–2T	Index block dowl screw
561–1T	Nut for adjusting screw
564–1T	Dowl pin for gauge
571–1T	Weight knob
572–1T	Threaded rod for weight
573–1T	Round nut for weight
574–1T	Weight, 150 K.G.
575–1T	Weight, 100 K.G.
580–1T	Index lever shield
581–1T	Index lever shield block
582–1T	Screws for shield
601–1T	Dash pot tube
603–1T	Dash pot screw cap
604–2T	Dash pot piston
605–3T	Dash pot piston rod
606–2T	Dash pot ball retainer
607–1T	Nut
608–3T	Baffle plate
609–1T	Connection sleeve
800–1T	Nut for pillar in base
801–1T	Front nut for pillar in head
802–1T	Back nut for pillar in head
803–1T	Base bushing for elevating screw
804–1T	Nut for bushing
805–1T	Set screw
806–1T	Gauge mounting block
807–1T	Screws
808–1T	Dowl pin
809–1T	Plunger sleeve
810–1T	Plunger sleeve cover

Part No.	Name of Part
811–1T	Lock ring
812–1T	Link
814–1T	Dash pot bracket
815–1T	Spindle for crank handle
816–1T	Bolts for dash pot bracket
819–1T	Lifting lever bearing stud screw
821–1T	Stop pin
822–1T	Weight arm lifting lever
823–1T	Weight arm support
824–1T	Weight arm lifting pin
831–1T	2½F elevating screw
832–1T	Weight arm
854–1T	Dust cover for Model 2½F
903–1T	Base bushing for elevating screw
904–1T	Nut for bushing
931–1T	Elevating screw
954–1T	Dust cover for Model 2G
1205–2T	Capstan hand wheel
1231–1T	Anvil, deep V, ¾" Shank
1232–1T	Anvil, shallow V, ¾" Shank
1233–1T	Anvil, 2" plane, ¾" Shank
1234–1T	Anvil, 1" spot, ¾" Shank
3106–1T	Dowl pin
3107–1T	Screws
3108–1T	Ball joints
3109–1T	Crank arm stop pin
3110–1T	Lock nut
3116–1T	Lifting arm pin
3120–1T	Lock nut
3122–1T	Knurled plate for weight arm
3123–1T	Screw for name plate
3125–1T	Screw for connection sleeve
3204–1T	Name plate
3211–1T	Pin for capstan hand wheel
3221–1T	Fulcrum pin for weight lever
3831–1T	3F elevating screw
3854–1T	Dust cover for Model 3F
4102–1T	Crank handle for lifting pin
4517–1T	Crank handle without counter balance
4831–1T	4F elevating screw
4854–1T	Dust cover for Modle 4F
5831–1T	5F elevating screw
5854–1T	Dust cover for Model 5F



MODEL H

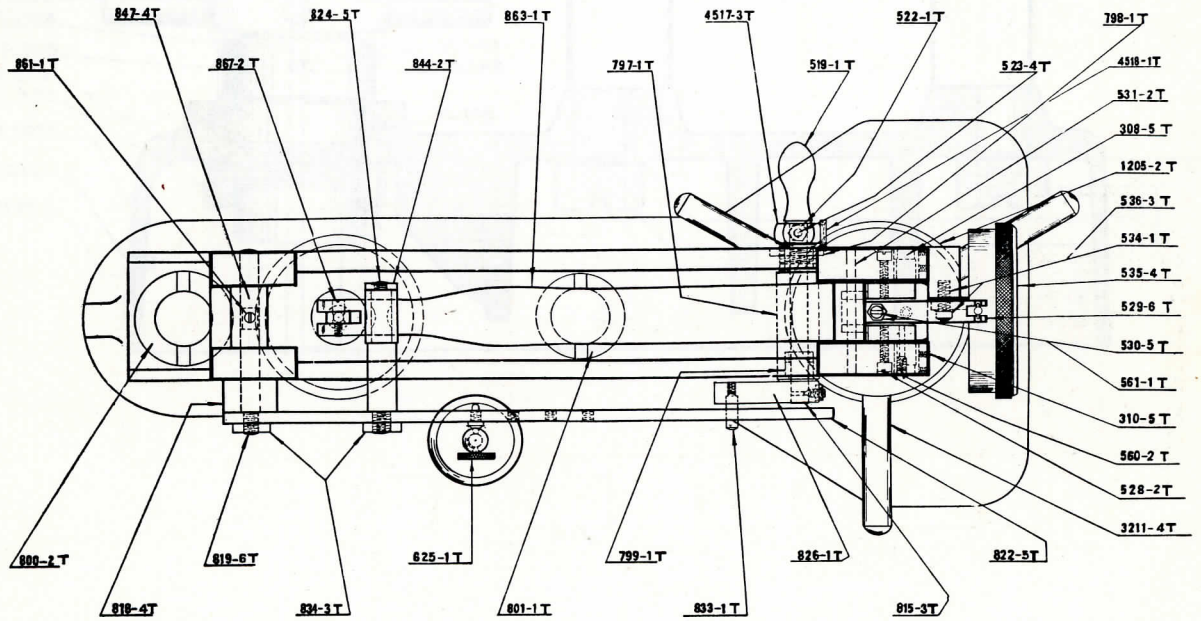
This drawing applies only to machines having double letters (as HH or KK) appearing as part of the individual machine number stamped in head casting at rear.



For Model "K" parts this same drawing applies except as to weight system and power lever. If part numbers as per this drawing are used but specification is made that the parts are for "K" model, or if individual machine number is given, correct parts will be sent.

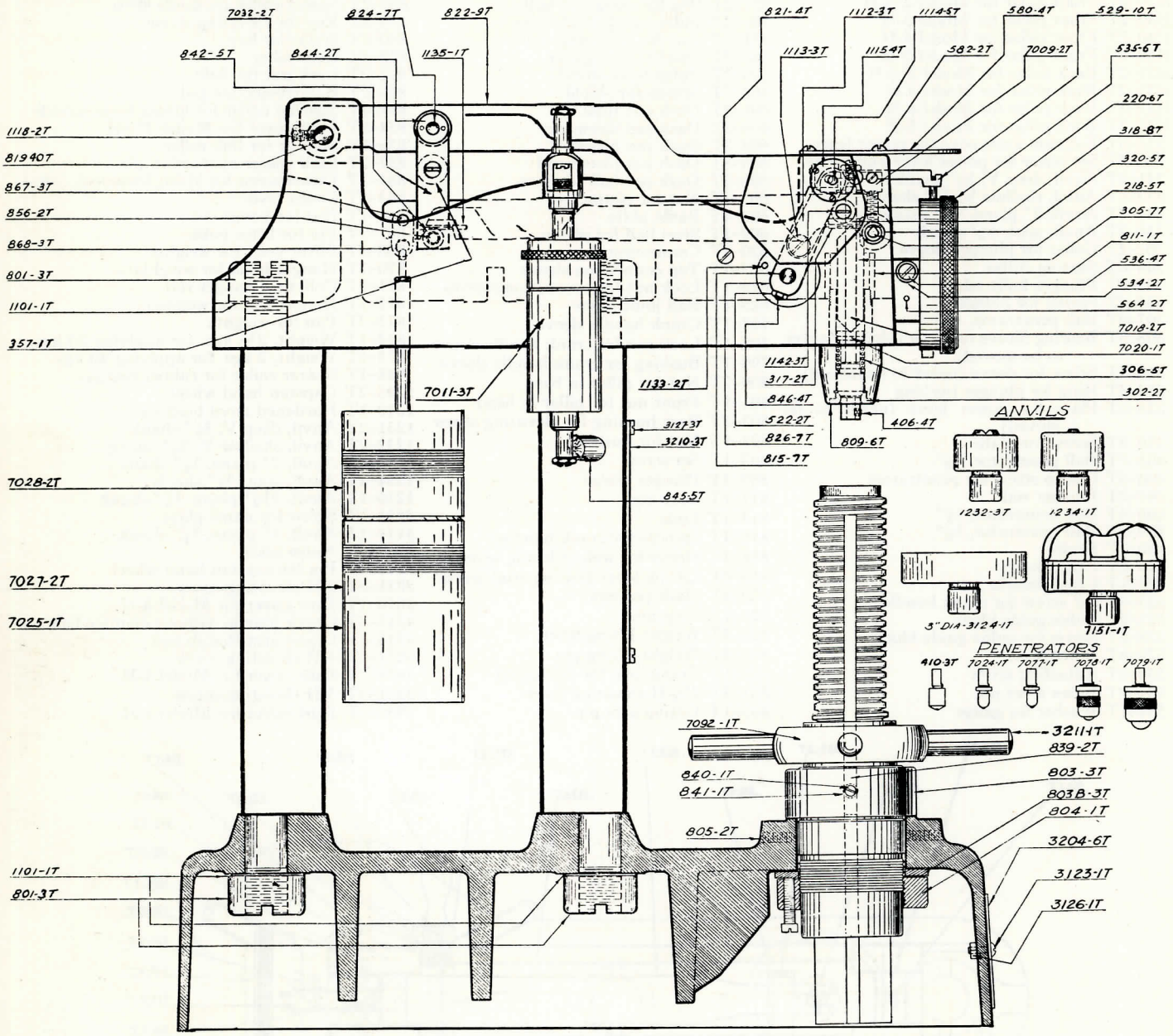
Model H "Rockwell" Hardness Tester Part Numbers and Names

Part No.	Name of Part
H1–2T	Model H base
H2–3T	Model H head
H20–2T	Front pillar for Model 2½-H
H30–2T	Front pillar for Model 3-H
H40–2T	Front pillar for Model 4-H
H50–2T	Front pillar for Model 5-H
H21–2T	Back pillar for Model 2½-H
H31–2T	Back pillar for Model 3-H
H41–2T	Back pillar for Model 4-H
H51–2T	Back pillar for Model 5-H
218–3T	Fulcrum knife edge for power lever
220–5T	Set screw for power lever knife edge
231–2T	Anvil, deep V, ½" shank
232–1T	Anvil, shallow V, ½" shank
233–3T	Anvil, 2" plane, ½" shank
234–2T	Anvil, spot, ½" shank
302–2T	Collar for plunger sleeve
304–6T	Seating collar
305–5T	Plunger knife edge
306–4T	Spring for plunger
307–9T	Ball penetrator, 1/16"
308–5T	Bearing Sleeve for lever fulcrum (never to be moved)
310–5T	Screw for sleeve (never to be moved)
313–3T	Ring for plunger bushing
318–6T	Plate for power lever (never to be moved)
319–3T	Screw for plate
405–7T	Ball penetrator, ⅛"
406–4T	Clamp screw for penetrators
407–7T	Plunger rod
408–4T	Ball penetrator, ¼"
409–3T	Ball penetrator, ½"
410–2T	Brale
519–1T	Crank knob
522–1T	Crank handle nut
523–4T	Set screw for crank handle
527–8T	Index guide block
528–2T	Screw for index guide block
529–6T	Index lever
530–5T	Adjusting screw
531–2T	Index lever pin
534–1T	Washer for gauge
535–4T	Gauge
536–3T	Screw for gauge
553–2T	Box for extra 1/16" balls
560–2T	Index block dowl screw
561–1T	Nut for adjusting screw
564–2T	Dowl pin for gauge
580–1T	Index lever shield
582–1T	Screws for shield
601–2T	Dash pot tube
603–3T	Dash pot screw cap
604–2T	Dash pot piston
605–5T	Dash pot piston rod
606–2T	Dash pot ball retainer
607–1T	Nut for piston rod
608–4T	Baffle plate
609–1T	Steel ball for piston
620–2T	Connection sleeve
623–1T	Top connection sleeve
624–1T	Lock nut for connection sleeves
625–1T	Ball joint screw
797–1T	Crank handle sleeve
798–1T	Lock nut for crank handle sleeve
799–1T	Bushing for crank handle sleeve
800–2T	Nut for pillar in base
801–1T	Front nut for pillar in head
803–3T	Base bushing for elevating screw
804–1T	Nut for bushing
805–1T	Set screw
809–3T	Plunger sleeve
811–1T	Lock ring
812–4T	Link
815–3T	Spindle for crank handle
818–4T	Sleeve for weight lifting lever
819–6T	Lifting lever bearing stud screw
820–2T	Dash pot stud
821–2T	Stop pin
822–5T	Weight lifting lever
824–5T	Weight lifting pin
826–1T	Crank arm for lifting pin
831–3T	2½-H elevating screw
833–1T	Lifting arm pin
834–3T	Lifting lever bearing spindle lock nut
837–2T	Guide strip
838–2T	Spacer collar for guide strip
839–1T	Key for elevating screw
840–1T	Screw for key
842–2T	Link roller
844–2T	Lock nut for link
845–2T	Ball connection pillar
847–4T	Spacing collar for lifting lever spindle
854–1T	Dust cover for Model 2½-H
856–1T	Spindle for link roller
857–2T	Link spacer connection pin
861–1T	Dowel screw for lifting lever lock collar
863–1T	Power lever
866–1T	Nut for hooks
867–2T	Pin for lifter yoke
868–3T	Lifter yoke for weights
870–1T	Hangar hook for weights
871–1T	Collet for hanger rod
872–1T	Hanger rod for weights
873–2T	Pan for weights
874–1T	Weight, 2½ kgs. for applying 50 kgs.
875–1T	Weight, 2 kgs. for applying 40 kgs.
938–1T	Spacer collar for rubber bumper
1205–2T	Capstan hand wheel
1210–1T	Hardened anvil bushing
1231–2T	Anvil, deep V, ¾" shank
1232–2T	Anvil, shallow V, ¾" shank
1233–1T	Anvil, 2" plane, ¾" shank
1234–2T	Anvil, spot, ¾" shank
1236–1T	Anvil, 2½" plane, ¾" shank
3123–1T	Screw for name plate
3124–1T	Anvil, 3" plane, ¾" shank
3204–3T	Name plate
3211–4T	Pin for capstan hand wheel
3831–3T	3-H elevating screw
3854–1T	Dust cover for Model 3-H
4517–3T	Crank handle without counter balance
4518–1T	Crank arm thumb rest
4831–3T	4-H elevating screw
4854–1T	Dust cover for Model 4-H
5831–3T	5-H elevating screw
5854–1T	Dust cover for Model 5-H



Model HM "Rockwell" Hardness Tester

Orders for parts, except penetrators, should invariably give the individual number of the machine for which they are required.



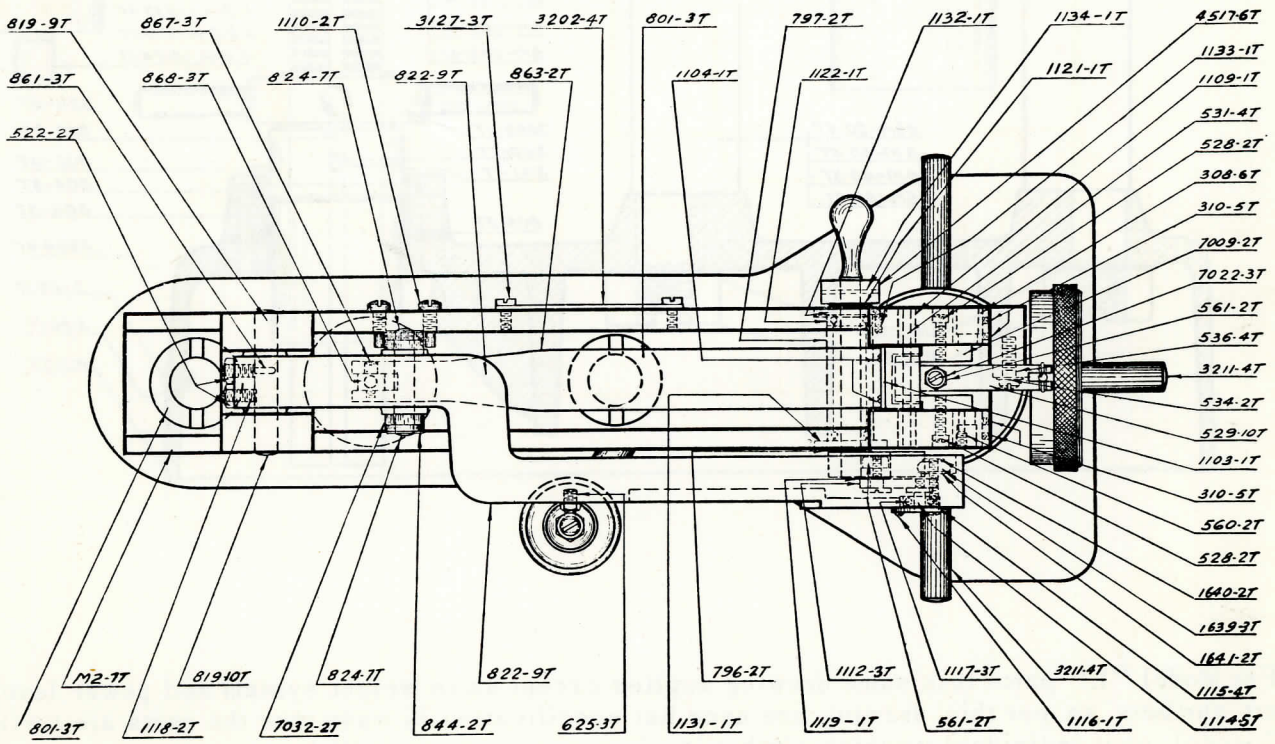
Model HM "Rockwell" Hardness Tester Part Numbers and Names

Orders for parts, except penetrators, should invariably give the individual number of the machine for which they are required.

Part No.	Name of Part
218–5T	Fulcrum Knife Edge for Power Lever.
220–6T	Set Screw for Power Lever Fulcrum Knife Edge.
302–2T	Collar for Plunger Sleeve.
305–7T	Plunger Knife Edge.
306–5T	Spring for Plunger.
308–6T	Bearing Sleeve for Lever Fulcrum (Never to be moved).
310–5T	Screw for Lever Fulcrum Bearing Sleeve (Never to be moved).
317–2T	Guide for Plunger Knife Edge.
318–8T	Plate for Power Lever (Never to be moved).
320–5T	Bearing Sleeve for Lever Fulcrum (Never to be moved).
406–4T	Clamp Screw for Penetrator.
410–3T	"BRALE."
522–2T	Nut for Crank Arm.
528–2T	Screw for Index Guide Block.
529–10T	Index Lever.
531–4T	Pin for Index Lever.
534–2T	Washer for Gauge.
535–5T	Dial Gauge.
536–4T	Screw for Gauge.
560–2T	Dowel Screw for Index Block.
561–2T	Nut for Index Lever Adjusting Screw.
564–2T	Dowel Pin for Gauge.
580–4T	Shield Plate.
582–2T	Screw for Shield Plate.
625–3T	Ball Joint for Dash Pot.
796–2T	Spacer for Crank Arm.
797–2T	Spacer for Crank Spindle Bearings.
801–3T	Nut for Pillars.
803–3T	Base Bushing.
804–1T	Nut for Bushing.
805–5T	Set Screw for Base Bushing.
809–6T	Plunger Sleeve.

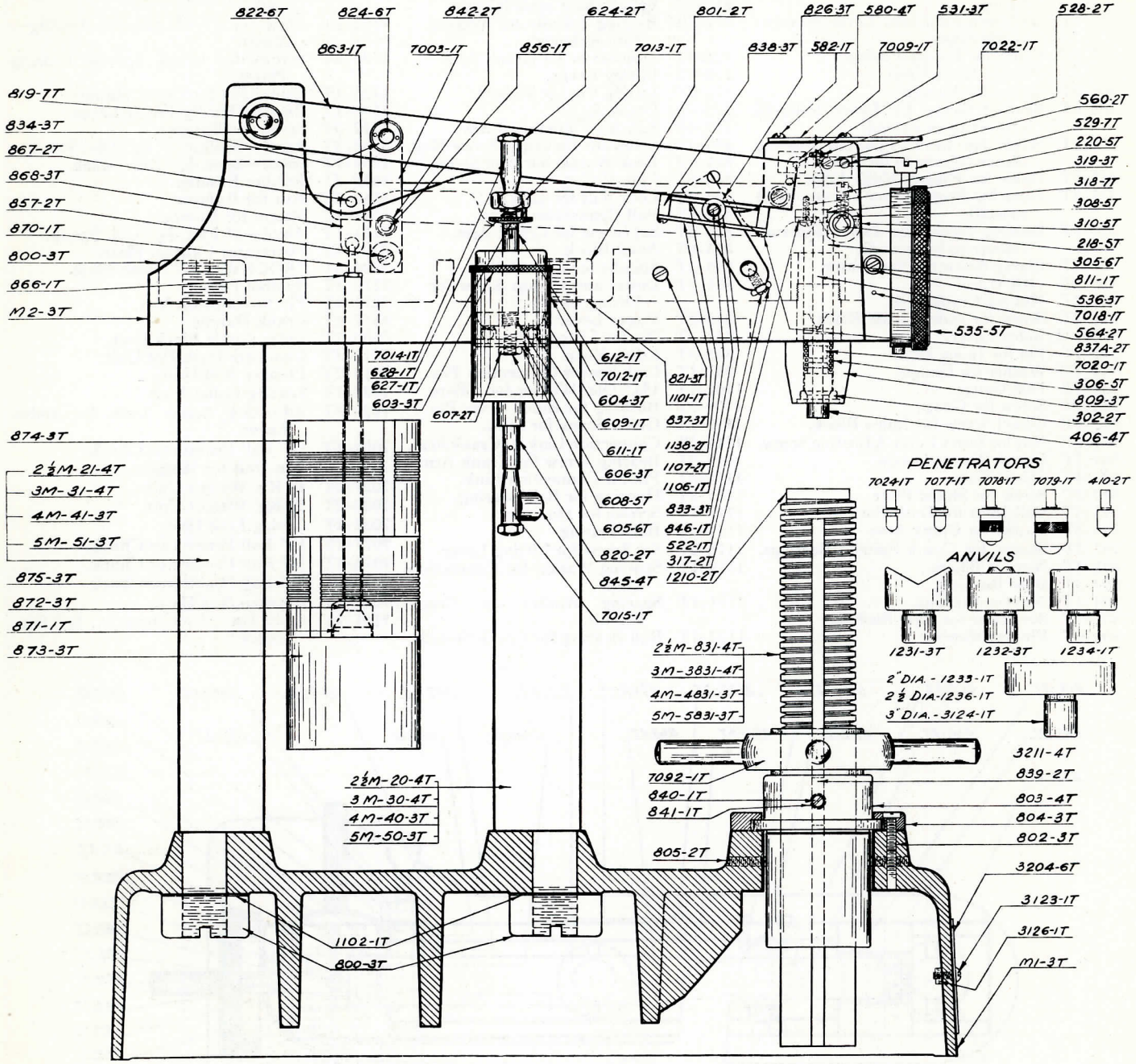
Part No.	Name of Part
811–1T	Lock Ring for Plunger Sleeve.
815–7T	Spindle for Crank Handle.
819–10T	Bearing Spindle for Weight Lifting Lever.
821–4T	Stop Screw for Crank Arm.
822–9T	Lifting Lever.
824–7T	Lifting Pin for Weight.
826–7T	Crank Arm.
839–4T	Key for Elevating Screw.
840–1T	Screw for Elevating Screw Key.
841–1T	Lock Washer for Key Screw.
842–5T	Link Roller.
844–2T	Lock Nut for Link.
845–5T	Ball Connection Pillar.
846–4T	Set Screw for Crank Arm.
855–6T	Anvil Block.
856–2T	Spindle for Link Roller.
861–3T	Dowel and Clamp Screw for Lifting Lever.
863–2T	Power Lever.
867–3T	Pin for Lifter Yoke.
868–3T	Lifter Yoke.
957–1T	Link Spacer Connection Pin.
1101–1T	1¾" Dia. Washer for Pillars.
1109–1T	Bushing for Index Lever Pin.
1110–2T	Guide Screw for Link.
1112–3T	Connection Link for Crank Arm.
1113–3T	Bearing Screw for Crank Arm.
1114–5T	Pin for Connection Link.
1115–4T	Housing for Ball Bearing.
1116–1T	Screws for Housing.
1117–3T	Ball Bearing.
1118–2T	Set Screw for Lifting Lever.
1119–1T	Spacing Washer for Connection Link.
1121–1T	Spacing Washer for Crank Handle.
1122–1T	Ball Bearing for Crank Spindle.

Part No.	Name of Part
1131–1T	Plate for Crank Spindle Bearing—Left.
1132–1T	Plate for Crank Spindle Bearing—Right.
1133–2T	Screws for Crank Spindle Bearing Plates.
1134–1T	Dowel Pin for Crank Handle.
1135–1T	Bearing Pin for Power Lever.
1142–3T	Screw for Bumper.
1232–3T	Anvil—Shallow V, ¾" Dia. Shank.
1234–1T	Anvil—Spot, ¾" Dia. Shank.
1639–3T	Rubber Bumper.
1640–2T	Nut for Bumper.
1641–2T	Spacer for Bumper.
3124–1T	Anvil—3" Flat, ¾" Dia. Shank.
3202–4T	Penetrator Caution Plate.
3204–8T	"ROCKWELL" Name Plate.
3210–3T	Symbol Plate.
3211–4T	Pin for Capstan Nut.
4517–6T	Crank Handle.
7009–2T	Index Guide Block Unit.
7011–3T	Complete Dash Pot Unit.
7018–2T	Plunger Rod Unit.
7020–1T	Seating Collar Unit.
7022–3T	Adjusting Screw Unit for Index Lever.
7024–1T	1/16" Ball Penetrator Chuck.
7025–1T	Pan Unit for Weight.
7027–2T	40 Kg. Weight Unit.
7028–2T	50 Kg. Weight Unit.
7032–2T	Lifting Link Unit.
7077–1T	⅛" Ball Penetrator Chuck.
7078–1T	¼" Ball Penetrator Chuck.
7079–1T	½" Ball Penetrator Chuck.
7092–1T	Capstan Nut Unit.
7151–1T	Anvil Unit, Cylindron Jr., ¾" Dia. Shank.



Model M "Rockwell" Hardness Tester

Orders for parts, except penetrators, should invariably give the individual number of the machine for which they are required.

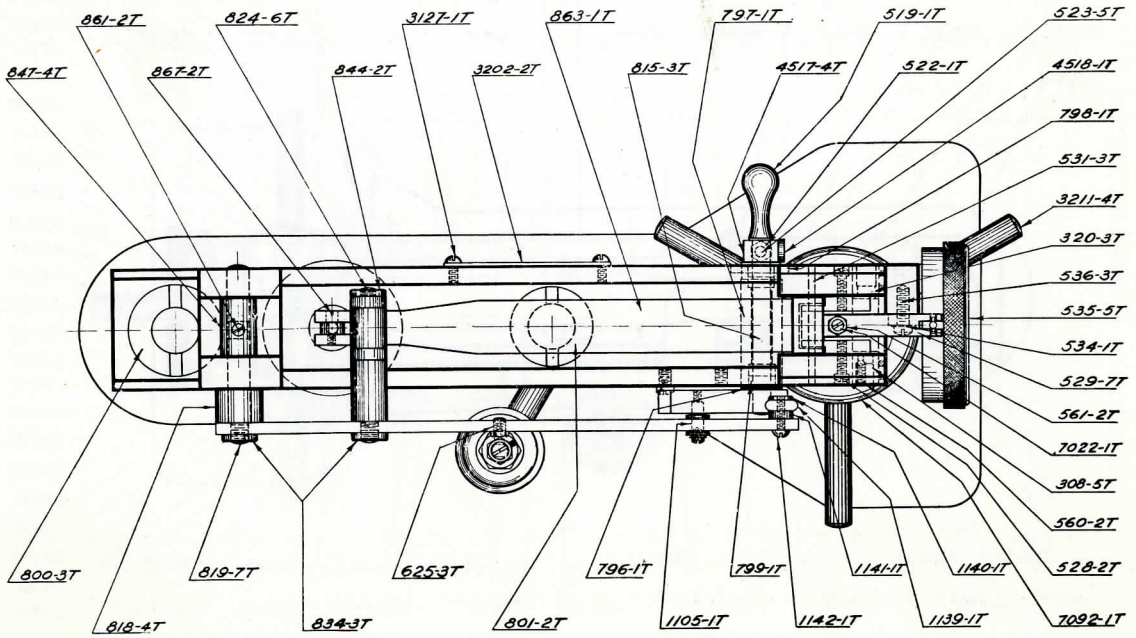


For Model "L" parts this same drawing applies except as to weight system and power lever. If part numbers as per this drawing are used but specification is made that the parts are for the "L" model, or if individual machine number is given, correct parts will be sent.

Model M "Rockwell" Hardness Tester Part Numbers and Names

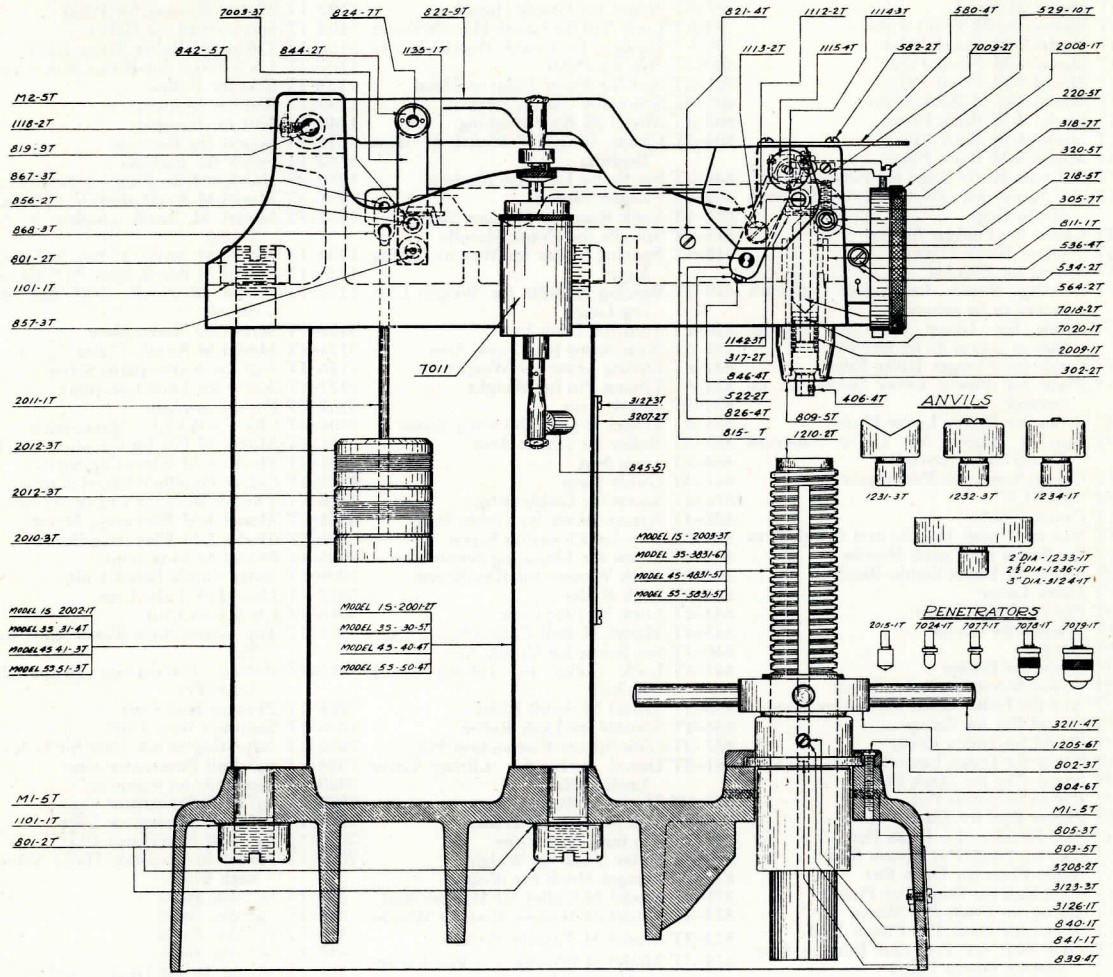
Orders for parts, except penetrators, should invariably give the individual number of the machine for which they are required.

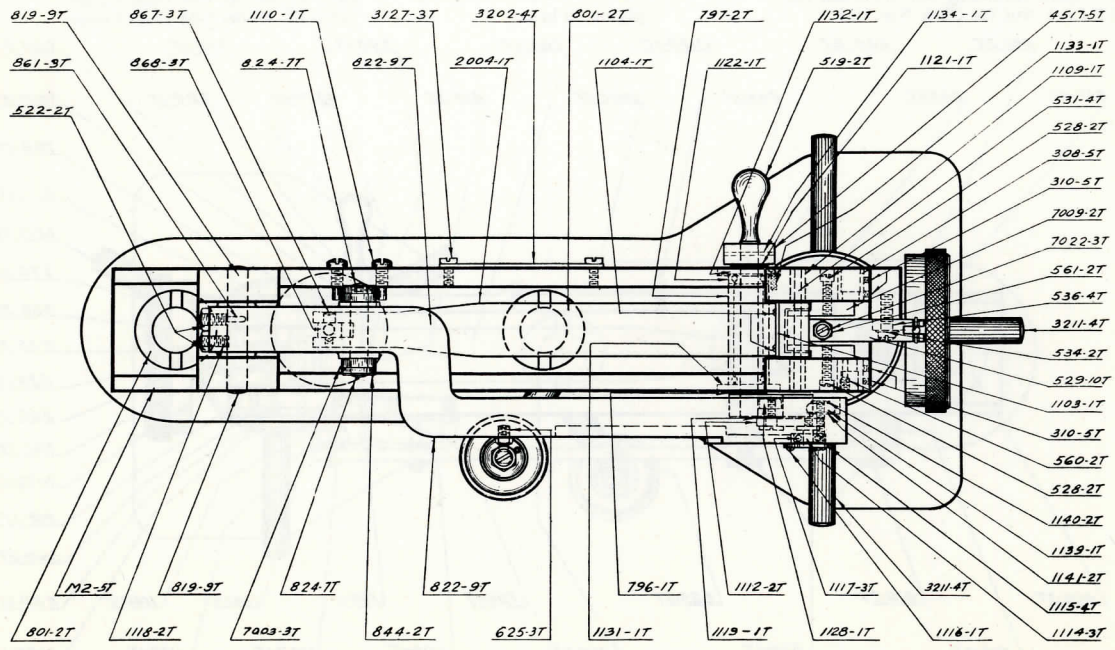
Part No.	Name of Part
M1–3T	Model M Base
M2–3T	Model M Head
M20–4T	Model 2½-M Front Pillar
M30–4T	Model 3-M Front Pillar
M40–3T	Model 4-M Front Pillar
M50–3T	Model 5-M Front Pillar
M21–4T	Model 2½-M Back Pillar
M31–4T	Model 3-M Back Pillar
M41–3T	Model 4-M Back Pillar
M51–3T	Model 5-M Back Pillar
218–5T	Fulcrum Knife Edge for Power Lever
220–5T	Set Screw for Power Lever Fulcrum Knife Edge
302–2T	Collar for Plunger Sleeve
305–6T	Plunger Knife Edge
306–5T	Spring for Plunger
308–5T	Bearing Sleeve for Lever Fulcrum (never to be moved)
310–5T	Screw for Lever Fulcrum Bearing Sleeve (never to be moved)
317–2T	Guide for Plunger Knife Edge
318–7T	Plate for Power Lever (never to be moved)
319–3T	Screw for Power Lever Plate
320–3T	Bearing Sleeve for Lever Fulcrum (never to be moved)
406–4T	Clamp Screw for Penetrator
410–2T	"BRALE"
519–1T	Crank Knob
522–1T	Nut for Crank Handle and Crank Arm
523–5T	Set Screw for Crank Handle
528–2T	Screw for Index Guide Block
529–7T	Index Lever
531–3T	Pin for Index Lever
534–1T	Washer for Gauge
535–5T	Gauge
536–3T	Screw for Gauge
560–2T	Dowel Screw for Index Block
561–2T	Nut for Index Lever Adjusting Screw
564–2T	Dowel Pin for Gauge
580–4T	Shield for Index Lever
582–1T	Screw for Index Lever Shield
603–3T	Screw Cap for Dash Pot
604–3T	Piston for Dash Pot
605–6T	Piston Rod for Dash Pot
606–3T	Ball Retainer for Dash Pot
607–2T	Nut for Dash Pot Piston Rod
608–5T	Baffle Plate for Dash Pot
609–1T	Steel Ball for Dash Pot Piston
611–1T	Spring for Dash Pot Sleeve
612–1T	Sleeve for Dash Pot Piston Rod
624–2T	Lock Nut for Top and Bottom Connection Sleeve Units
625–3T	Ball Joint for Dash Pot
627–1T	Speed Adjusting Nut for Dash Pot
628–1T	Lock Nut for Click Nut Unit
796–1T	Spacer for Crank Arm
797–1T	Sleeve for Crank Handle
798–1T	Lock Nut for Crank Handle Sleeve
799–1T	Bushing for Crank Handle Sleeve
800–3T	Nut for Pillar
801–2T	Nut for Front Pillar in Head
802–3T	Screw for Clamp Ring
803–4T	Model M Base Bushing
804–3T	Clamp Ring for Model M Base Bushing
805–2T	Set Screw for Base Bushing
809–3T	Plunger Sleeve
811–1T	Lock Ring for Plunger Sleeve
815–3T	Spindle for Crank Handle
818–4T	Spacing Collar for Weight Lifting Lever
819–7T	Bearing Spindle for Weight Lifting Lever
820–2T	Stud for Dash Pot
821–3T	Stop Screw for Crank Arm
822–6T	Lifting Lever for Weight
824–6T	Lifting Pin for Weight
826–3T	Crank Arm
831–4T	Model 2½-M Elevating Screw
833–3T	Roller for Crank Arm
834–3T	Lock Nut
837–3T	Guide Strip
837a–2T	Screw for Guide Strip
838–3T	Spacer Block for Guide Strip
839–2T	Key for Elevating Screw
840–1T	Screw for Elevating Screw Key
841–1T	Lock Washer for Key Screw
842–2T	Link Roller
844–2T	Lock Nut for Link
845–4T	Model M Ball Connection Pillar
846–3T	Set Screw for Crank Arm
847–4T	Lock Collar for Lifting Lever Spindle
855–5T	Model M Anvil Block
856–1T	Spindle for Link Roller
857–2T	Link Spacer Connection Pin
861–2T	Dowel Screw for Lifting Lever Lock Collar
863–1T	Model M Power Lever
866–1T	Nut for Hanger Hook
867–2T	Pin for Lifter Yoke
868–3T	Lifter Yoke for Weight
870–1T	Hanger Hook for Weight
871–1T	Model M Collet for Hanger Rod
872–3T	Model M Hanger Rod for Weight
873–3T	Model M Pan for Weight
874–3T	Model M Weight, 2½ kgs. for applying 50 kgs.
875–3T	Model M Weight, 2 kgs. for applying 40 kgs.
1101–1T	1¾" dia. Washer for Pillar
1102–1T	2" dia. Washer for Pillar
1105–1T	Screw Stud for Roller
1106–1T	Collar for Roller Screw Stud
1107–2T	Lock Screw for Roller Screw Stud
1138–2T	Rod for Roller
1139–1T	Rubber Bumper
1140–1T	Nut for Bumper
1141–1T	Spacer for Bumper
1142–1T	Screw for Bumper
1210–2T	Hardened Bushing for Elevating Screw
1231–3T	Model M Anvil, deep V, ¾" dia. Shank
1232–3T	Model M Anvil, shallow V, ¾" dia. Shank
1233–1T	Model M Anvil, 2" flat, ¾" dia. Shank
1234–1T	Model M Anvil, spot, ¾" dia. Shank
1236–1T	Model M Anvil, 2½" flat, ¾" dia. Shank
3123–1T	Screw for Name-plate
3124–1T	Model M Anvil, 3" flat, ¾" dia. Shank
3126–1T	Nut for Name-plate Screw
3127–1T	Screw for Direction-plate
3202–2T	Direction-plate
3204–6T	"ROCKWELL" Name-plate
3211–4T	Model M Pin for Capstan Hand Wheel
3831–4T	Model 3-M Elevating Screw
4517–4T	Crank Handle without counter balance
4518–1T	Thumb Rest for Crank Handle
4831–3T	Model 4-M Elevating Screw
5831–3T	Model 5-M Elevating Screw
7003–1T	Model M Link Unit
7009–1T	Index Guide Block Unit
7012–1T	Dash Pot Tube Unit
7013–1T	Click Nut Unit
7014–1T	Top Connection Sleeve Unit for Dash Pot
7015–1T	Bottom Connection Sleeve Unit for Dash Pot
7018–1T	Plunger Rod Unit
7020–1T	Seating Collar Unit
7022–1T	Adjusting Screw Unit for Index Lever
7024–1T	1/16" Ball Penetrator Unit
7029–1T	Box Unit for extra 1/16"
7077–1T	⅛" Ball Penetrator Unit
7078–1T	¼" Ball Penetrator Unit
7079–1T	½" Ball Penetrator Unit
7092–1T	Model M Capstan Hand Wheel Unit with Pins
322–1T	1/16" dia. Balls
415–1T	⅛" dia. Balls
416–1T	¼" dia. Balls
417–1T	½" dia. Balls
854–1T	Model 2½-M Dust Cover
3854–1T	Model 3-M Dust Cover
4854–1T	Model 4-M Dust Cover
5854–1T	Model 5-M Dust Cover



Model S "ROCKWELL" SUPERFICIAL Hardness Tester

Orders for parts, except penetrators, should invariably give the individual number of the machine for which they are required.





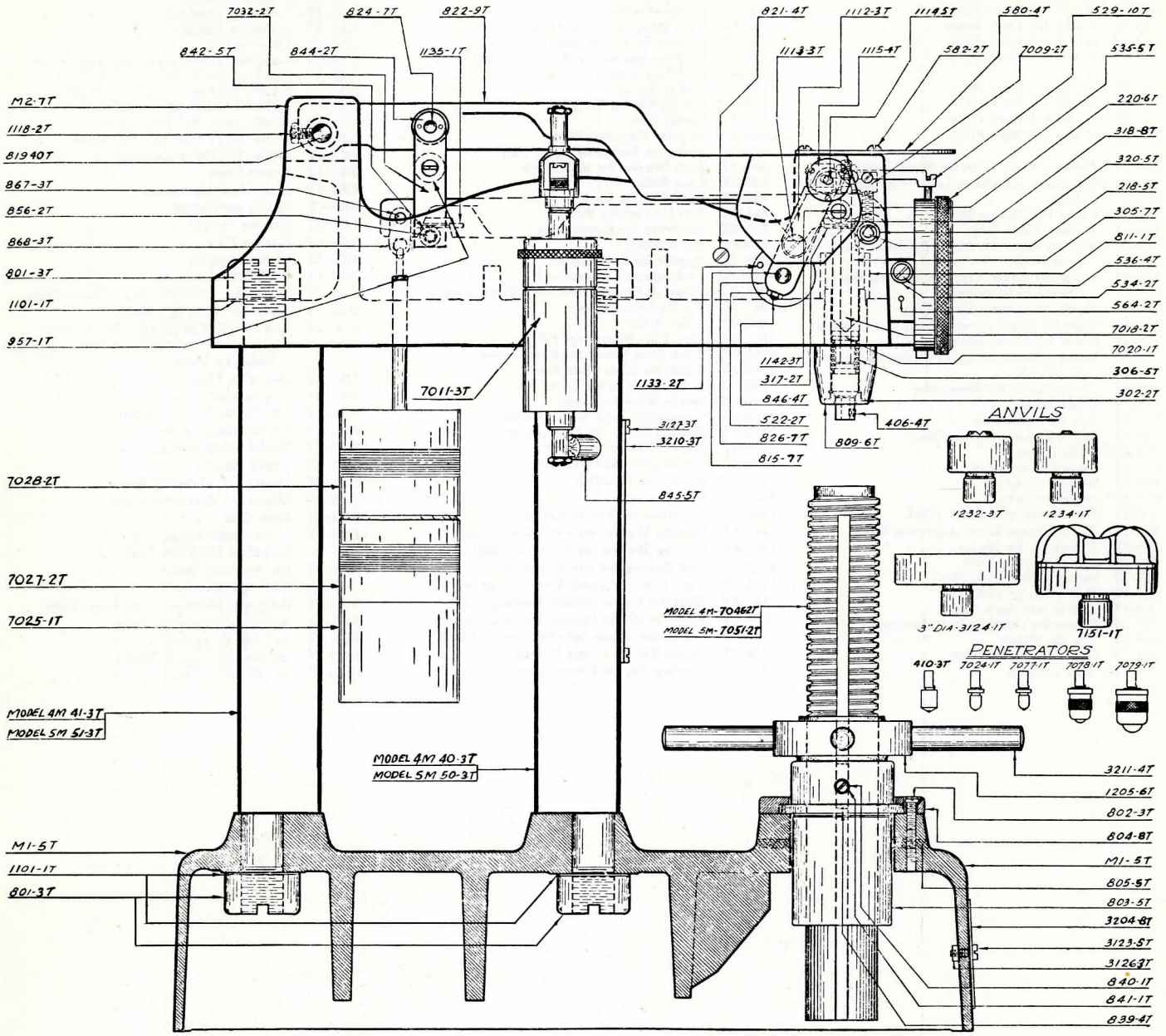
Model S "ROCKWELL" SUPERFICIAL Hardness Tester Parts List

Orders for parts, except penetrators, should invariably give the individual number of the machine for which they are required.

Part No.	Name of Part
M1–5T	Model S Base
M2–5T	Model S Head
2001–2T	Model 1–S Front Pillar
30–5T	Model 3–S Front Pillar
40–4T	Model 4–S Front Pillar
50–4T	Model 5–S Front Pillar
2002–2T	Model 1–S Back Pillar
31–4T	Model 3–S Back Pillar
41–3T	Model 4–S Back Pillar
51–3T	Model 5–S Back Pillar
218–5T	Fulcrum Knife Edge for Power Lever
220–6T	Set Screw for Power Lever Fulcrum Knife Edge
302–2T	Collar for Plunger Sleeve
305–7T	Plunger Knife Edge
308–5T	Bearing Sleeve for Lever Fulcrum (Never to be moved)
310–5T	Screw for Lever Fulcrum Bearing Sleeve (Never to be moved)
317–2T	Guide for Plunger Knife Edge
318–8T	Plate for Power Lever (Never to be moved)
319–4T	Screw for Power Lever Plate
320–5T	Bearing Sleeve for Lever Fulcrum (Never to be moved)
406–4T	Clamp Screw for Penetrator
519–2T	Crank Knob
522–2T	Nut for crank arm
528–2T	Screw for Index Guide Block
529–10T	Index Lever
531–4T	Pin for Index Lever
534–2T	Washer for gauge
536–4T	Screw for gauge
560–2T	Dowel Screw for Index Block
561–2T	Nut for Index Lever Adjusting Screw
564–2T	Dowel Pin for Gauge
580–4T	Dust Shielding Plate
582–2T	Screw for Shielding Plate
625–3T	Ball Joint for Dash Pot
796–1T	Spacer for Crank Arm
797–2T	Spacer for Crank Spindle Bearings
801–2T	Nut for Pillars
802–3T	Screw for Clamp Ring
803–5T	Base Bushing
804–6T	Clamp Ring for Base Bushing
805–5T	Set Screw for Base Bushing
809–5T	Plunger Sleeve
811–1T	Lock Ring for Plunger Sleeve
815–5T	Spindle for Crank Handle
819–9T	Bearing Spindle for Weight Lifting Lever
821–4T	Stop Screw for Crank Arm
822–9T	Lifting Lever
824–7T	Lifting Pin for Weight
826–5T	Crank Arm
839–4T	Key for Elevating Screw
840–1T	Screw for Elevating Screw Key
841–1T	Lock Washer for Key Screw
842–5T	Link Roller
844–2T	Lock Nut for Link
845–5T	Ball Connection Pillar
846–4T	Set Screw for Crank Arm
855–6T	Anvil Block
856–2T	Spindle for Link Roller
857–3T	Link Spacer Connection Pin
861–3T	Dowel & Clamp Screw for Lifting Lever
867–3T	Pin for Lifter Yoke
868–3T	Lifter Yoke
1101–1T	1¾" Dia. Washer for Pillars
1103–1T	Fibre Dust Shield for Index Lever
1104–1T	Screw for Fibre Dust Shield
1109–1T	Bushing for Index Lever Pin
1110–1T	Guide Screw for Link
1112–2T	Connection Link for Crank Arm
1113–2T	Bearing Screw for Crank Arm
1114–4T	Pin for Connection Link
1115–4T	Housing for Ball Bearing
1116–1T	Screws for Housing
1117–3T	Ball Bearing
1118–2T	Set Screw for Lifting Lever
1119–1T	Spacing Washer for Connection Link
1121–1T	Spacing Washer for Crank Handle
1122–1T	Ball Bearing for Crank Spindle
1128–1T	Lock Nut for Crank Arm Bearing Screw
1131–1T	Plate for Crank Spindle Bearing—Left
1132–1T	Plate for Crank Spindle Bearing—Right
1133–1T	Screws for Crank Spindle Bearing Plates
1134–1T	Dowel Pin for Crank Handle
1135–1T	Bearing Pin for Power Lever
1139–1T	Rubber Bumper
1140–2T	Nut for Bumper
1141–2T	Spacer for Bumper
1142–3T	Screw for Bumper
1205–6T	Capstan Nut
1210–2T	Hardened Bushing for Elevating Screw
1231–3T	Anvil—Deep V, ¾" Dia. Shank
1232–3T	Anvil—Shallow V, ¾" Dia. Shank
1233–1T	Anvil—2" Flat, ¾" Dia. Shank
1234–1T	Anvil—Spot, ¾" Dia. Shank
1236–1T	Anvil—2½" Flat, ¾"Dia. Shank
2003–3T	Model 1–S Elevating Screw
2004–1T	Power Lever
2008–1T	Superficial Dial Gauge
2009–1T	Spring for Plunger
2010–3T	Pan for Weight
2011–1T	Hanger Rod
2012–3T	15 Kg. Weight
2015–1T	"N" "BRALE"
3123–3T	Screws for "ROCKWELL" Name Plate
3124–1T	Anvil—3" Flat, ¾" Shank
3126–1T	Nut for "ROCKWELL" Name Plate
3127–3T	Screw for "ROCKWELL" Instruction and Direction Plate
3202–4T	-Direction Plate
3207–2T	"Superficial" Direction Plate
3208–2T	"ROCKWELL" Superficial Name Plate
3211–4T	Pin for Capstan Nut
3831–6T	Model 3–S Elevating Screw
4517–5T	Crank Handle
4831–5T	Model 4–S Elevating Screw
5831–5T	Model 5–S Elevating Screw
7003–3T	Link Unit
7009–2T	Index Guide Block Unit
7011	Complete Dash Pot Unit
7018–2T	Plunger Rod Unit
7020–1T	Seating Collar Unit
7022–3T	Adjusting Screw Unit for Index Lever
7024–1T	1/16" Ball Penetrator Chuck
7077–1T	⅛" Ball Penetrator Chuck
7078–1T	¼" Ball Penetrator Chuck
7079–1T	½" Ball Penetrator Chuck

Model MM "Rockwell" Hardness Tester

Orders for parts, except penetrators, should invariably give the individual number of the machine for which they are required.



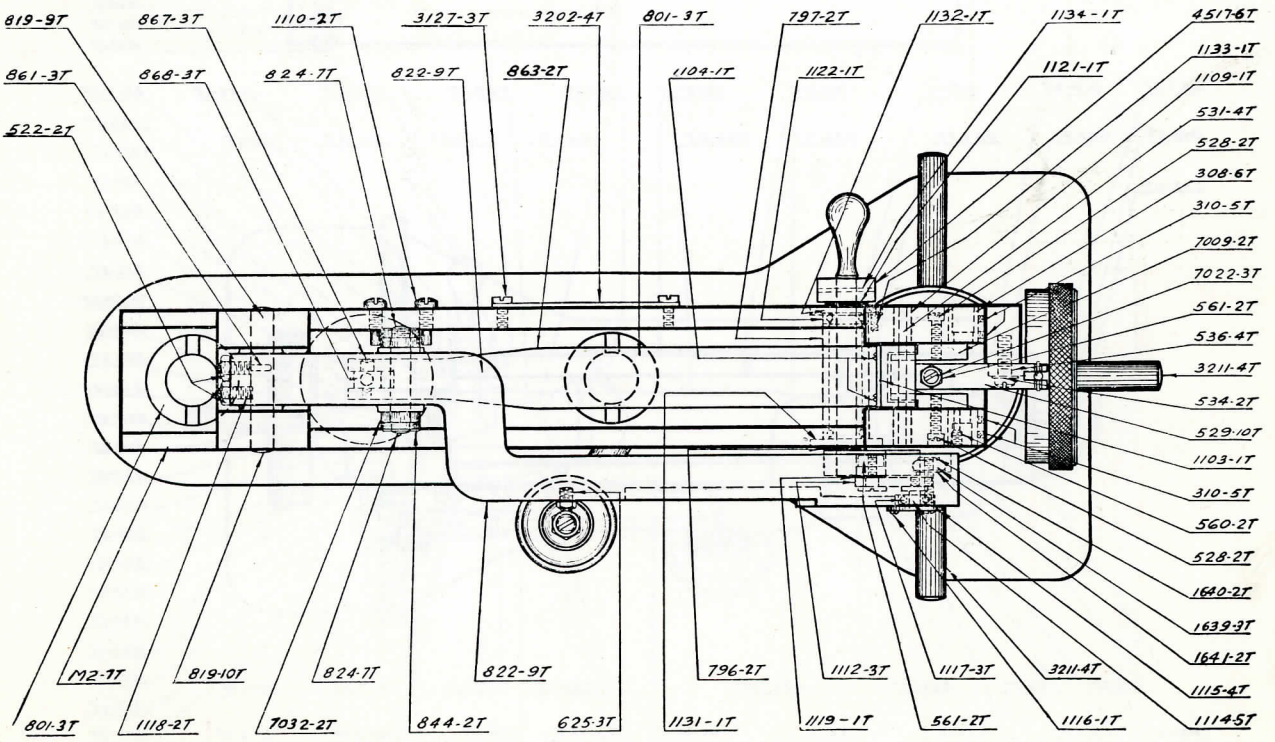
Model MM "Rockwell" Hardness Tester Part Numbers and Names

Orders for parts, except penetrators, should invariably give the individual number of the machine for which they are required.

Part No.	Name of Part
M1–5T	Model M Base.
M2–7T	Model M Head.
40–3T	Model 4 M Front Pillar.
50–3T	Model 5 M Front Pillar.
41–3T	Model 4 M Back Pillar.
51–3T	Model 5 M Back Pillar.
218–5T	Fulcrum Knife Edge for Power Lever.
220–6T	Set Screw for Power Lever Fulcrum Knife Edge.
302–2T	Collar for Plunger Sleeve.
305–7T	Plunger Knife Edge.
306–5T	Spring for Plunger.
308–6T	Bearing Sleeve for Lever Fulcrum (Never to be moved).
310–5T	Screw for Lever Fulcrum Bearing Sleeve (Never to be moved).
317–2T	Guide for Plunger Knife Edge.
318–8T	Plate for Power Lever (Never to be moved).
320–5T	Bearing Sleeve for Lever Fulcrum (Never to be moved).
406–4T	Clamp Screw for Penetrator.
410–3T	"BRALE."
522–2T	Nut for Crank Arm.
528–2T	Screw for Index Guide Block.
529–10T	Index Lever.
531–4T	Pin for Index Lever.
534–2T	Washer for Gauge.
535–5T	Dial Gauge.
536–4T	Screw for Gauge.
560–2T	Dowel Screw for Index Block.
561–2T	Nut for Index Lever Adjusting Screw.
564–2T	Dowel Pin for Gauge.
580–4T	Shield Plate.
582–2T	Screw for Shield Plate.
625–3T	Ball Joint for Dash Pot.
796–2T	Spacer for Crank Arm.
797–2T	Spacer for Crank Spindle Bearings.
801–3T	Nut for Pillars.

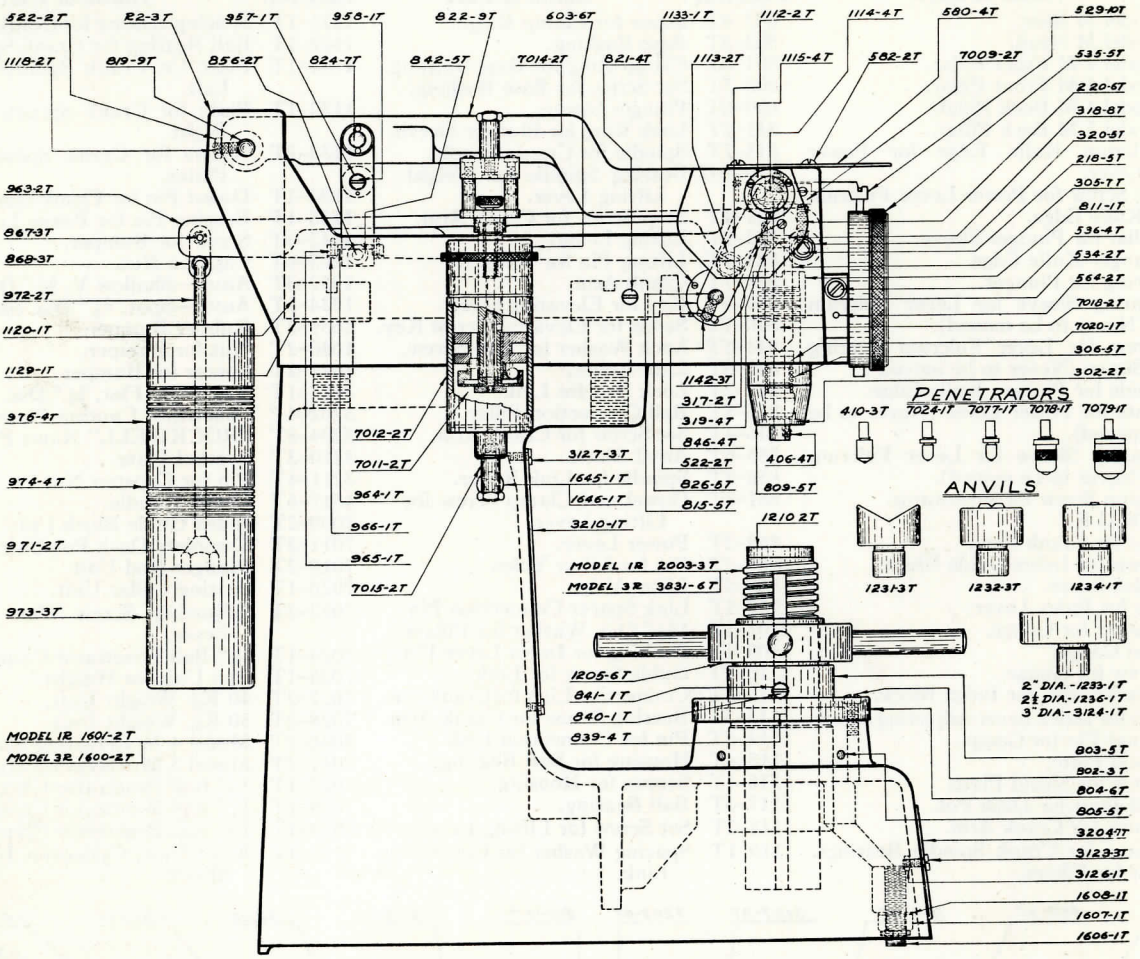
Part No.	Name of Part
802–4T	Screw for Clamp Ring.
803–5T	Base Bushing.
804–8T	Clamp Ring for Base Bushing.
805–5T	Set Screw for Base Bushing.
809–6T	Plunger Sleeve.
811–1T	Lock Ring for Plunger Sleeve.
815–7T	Spindle for Crank Handle.
819–10T	Bearing Spindle for Weight Lifting Lever.
821–4T	Stop Screw for Crank Arm.
822–9T	Lifting Lever.
824–7T	Lifting Pin for Weight.
826–7T	Crank Arm.
839–4T	Key for Elevating Screw.
840–1T	Screw for Elevating Screw Key.
841–1T	Lock Washer for Key Screw.
842–5T	Link Roller.
844–2T	Lock Nut for Link.
845–5T	Ball Connection Pillar.
846–4T	Set Screw for Crank Arm.
855–6T	Anvil Block.
856–2T	Spindle for Link Roller.
861–3T	Dowel and Clamp Screw for Lifting Lever.
863–2T	Power Lever.
867–3T	Pin for Lifter Yoke.
868–3T	Lifter Yoke.
957–1T	Link Spacer Connection Pin.
1101–1T	1¾" Dia. Washer for Pillars.
1109–1T	Bushing for Index Lever Pin.
1110–2T	Guide Screw for Link.
1112–3T	Connection Link for Crank Arm.
1113–3T	Bearing Screw for Crank Arm.
1114–5T	Pin for Connection Link.
1115–4T	Housing for Ball Bearing.
1116–1T	Screws for Housing.
1117–3T	Ball Bearing.
1118–2T	Set Screw for Lifting Lever.
1119–1T	Spacing Washer for Connection Link.

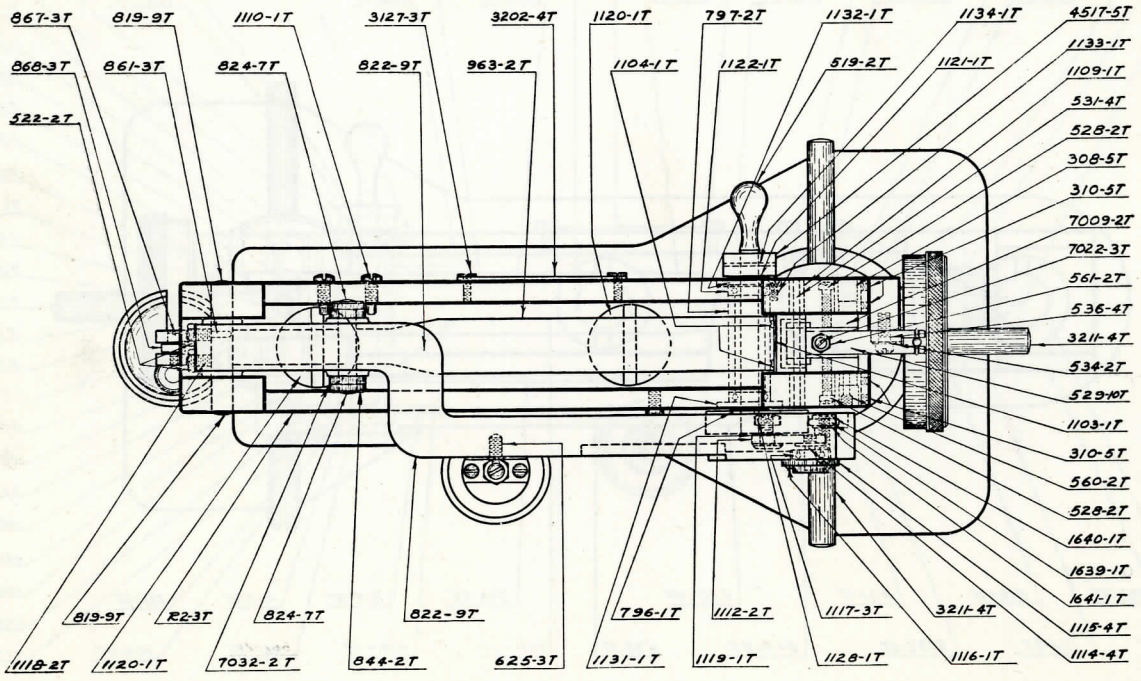
Part No.	Name of Part
1121–1T	Spacing Washer for Crank Handle.
1122–1T	Ball Bearing for Crank Spindle.
1131–1T	Plate for Crank Spindle Bearing—Left.
1132–1T	Plate for Crank Spindle Bearing—Right.
1133–2T	Screws for Crank Spindle Bearing Plates.
1134–1T	Dowel Pin for Crank Handle.
1135–1T	Bearing Pin for Power Lever.
1142–3T	Screw for Bumper.
1205–6T	Capstan Nut.
1232–3T	Anvil—Shallow V, ¾" Dia. Shank.
1234–1T	Anvil—Spot, ¾" Dia. Shank.
1639–3T	Rubber Bumper.
1640–2T	Nut for Bumper.
1641–2T	Spacer for Bumper.
3124–1T	Anvil—3" Flat, ¾" Dia. Shank.
3202–4T	Penetrator Caution Plate.
3204–8T	"ROCKWELL" Name Plate.
3210–3T	Symbol Plate.
3211–4T	Pin for Capstan Nut.
4517–6T	Crank Handle.
7009–2T	Index Guide Block Unit.
7011–3T	Complete Dash Pot Unit.
7018–2T	Plunger Rod Unit.
7020–1T	Seating Collar Unit.
7022–3T	Adjusting Screw Unit for Index Lever.
7024–1T	1/16" Ball Penetrator Chuck.
7025–1T	Pan Unit for Weight.
7027–2T	40 Kg. Weight Unit.
7028–2T	50 Kg. Weight Unit.
7046–2T	Model 4 M Elevating Screw Unit.
7051–2T	Model 5 M Elevating Screw Unit.
7077–1T	⅛" Ball Penetrator Chuck.
7078–1T	¼" Ball Penetrator Chuck.
7079–1T	½" Ball Penetrator Chuck.
7151–1T	Anvil Unit, Cylindron Jr., ¾" Dia. Shank.



Model R "Rockwell" Hardness Tester

Orders for parts, except penetrators, should invariably give the individual number of the machine for which they are required.





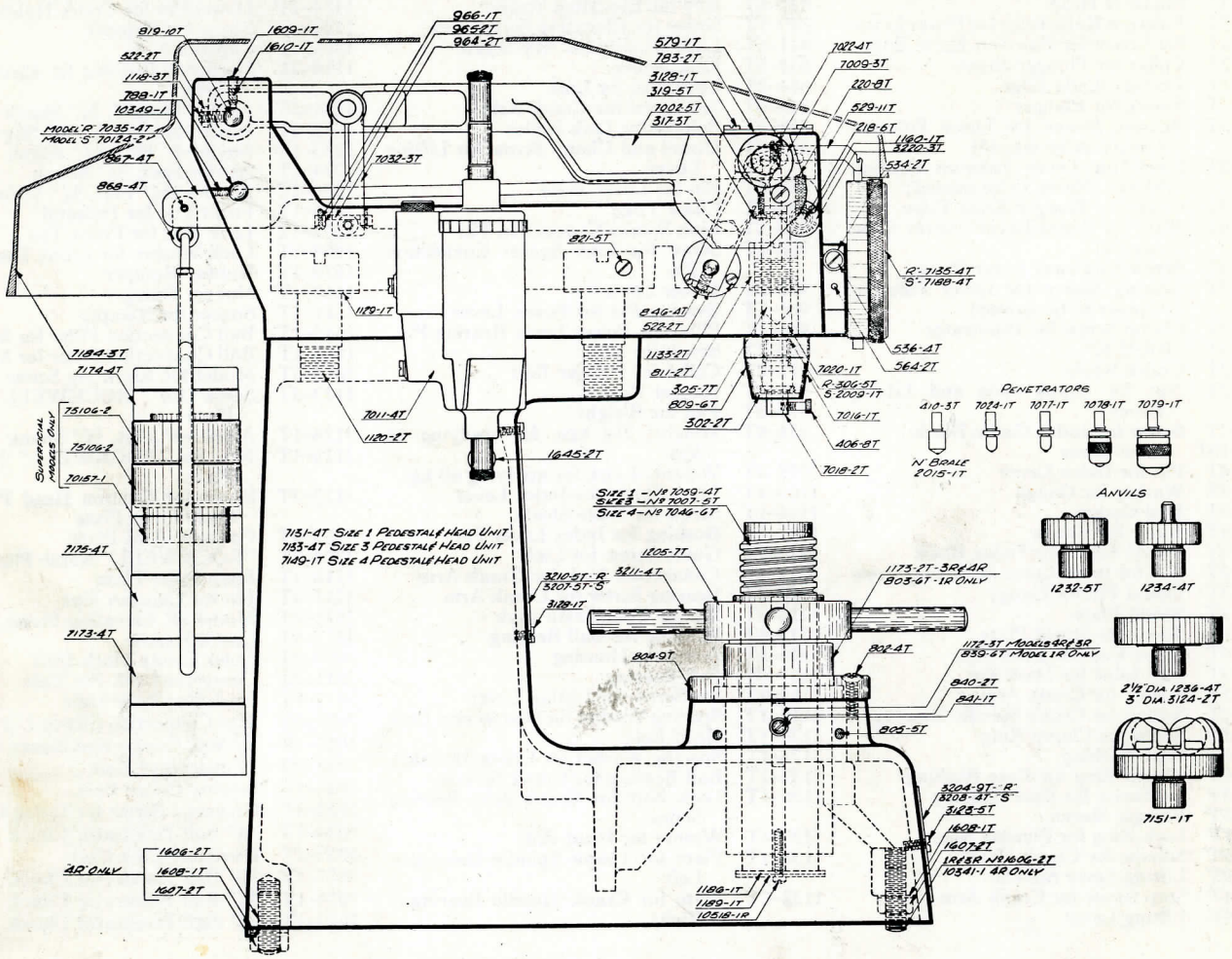
Model R "Rockwell" Hardness Tester Part Numbers and Names

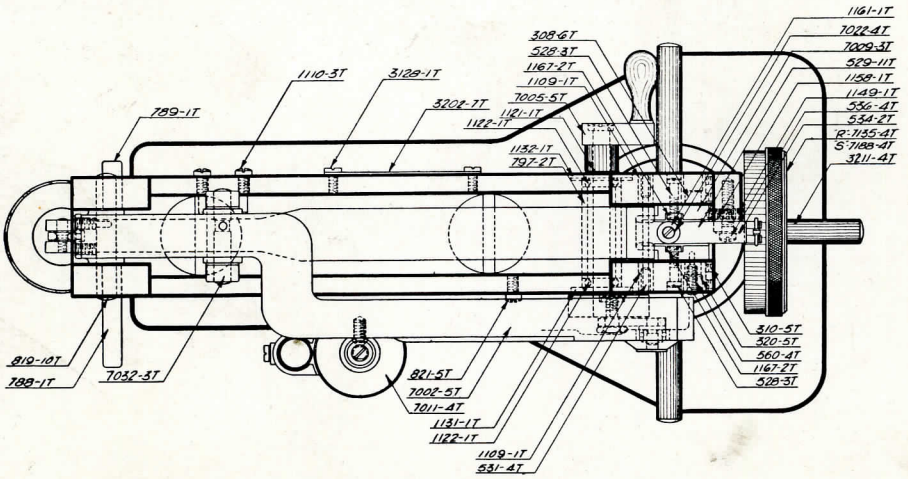
Orders for parts, except penetrators, should invariably give the individual number of the machine for which they are required.

Part No.	Name of Part
1601–2T	Model 1R Pedestal
1600–2T	Model 3R Pedestal
R2–3T	Model R Head
218–5T	Fulcrum Knife Edge for Power Lever
220–6T	Set Screw for Fulcrum Knife Edge
302–2T	Collar for Plunger Sleeve
305–7T	Plunger Knife Edge
306–5T	Spring for Plunger
308–5T	Bearing Sleeve for Lever Fulcrum (Never to be moved)
310–5T	Screw for Lever Fulcrum Bearing Sleeve (Never to be moved)
317–2T	Guide for Plunger Knife Edge
318–8T	Plate for Power Lever (Never to be moved)
319–4T	Screw for Power Lever Plate
320–5T	Bearing Sleeve for Lever Fulcrum (Never to be moved)
406–4T	Clamp Screw for Penetrator
410–3T	"BRALE"
519–2T	Crank Knob
522–2T	Nut for Crank Arm and Lifting Lever
528–2T	Screw for Index Guide Block
529–10T	Index Lever
531–4T	Pin for Index Lever
534–2T	Washer for Gauge
535–5T	Dial Gauge
536–4T	Screw for Gauge
560–2T	Dowel Screw for Index Block
561–2T	Nut for Index Lever Adjusting Screw
564–2T	Dowel Pin for Gauge
580–4T	Shield Plate
582–2T	Screw for Shield Plate
603–6T	Screw Cap for Dash Pot
625–3T	Ball Joint for Dash Pot
796–1T	Spacer for Crank Arm
797–2T	Spacer for Crank Spindle Bearings
802–3T	Screw for Clamp Ring
803–5T	Base Bushing
804–6T	Clamp Ring for Base Bushing
805–5T	Set Screw for Base Bushing
809–5T	Plunger Sleeve
811–1T	Lock Ring for Plunger Sleeve
815–5T	Spindle for Crank Handle
819–9T	Lifting Lever Spindle
821–4T	Stop Screw for Crank Arm
822–9T	Lifting Lever
824–7T	Lifting Link Spindle
826–5T	Crank Arm
839–4T	Key for Elevating Screw
840–1T	Screw for Elevating Screw Key
841–1T	Lock Washer for Key Screw
842–5T	Link Roller
844–2T	Lock Nut for Link
846–4T	Set Screw for Crank Arm
856–2T	Spindle for Link Roller
861–3T	Dowel and Clamp Screw for Lifting Lever
867–3T	Pin for Lifter Yoke
868–3T	Lifter Yoke
957–1T	Link Spacer Connection Pin
958–1T	Screw for Link Spacer Connection Pin
963–2T	Power Lever
964–1T	Bearing Pin for Power Lever
965–1T	Pillar for Power Lever Bearing Pin
966–1T	Screw for Pillar
971–2T	Collet for Hanger Rod
972–2T	Hanger Rod
973–3T	Pan for Weight
974–4T	Weight, 2½ kgs. for applying 50 kgs.
975–4T	Weight, 2 kgs. for applying 40 kgs.
1103–1T	Fibre Shield for Index Lever
1104–1T	Screw for Fibre Shield
1109–1T	Bushing for Index Lever Pin
1110–1T	Guide Screw for Link
1112–2T	Connection Link for Crank Arm
1113–2T	Bearing Screw for Crank Arm
1114–4T	Pin for Connection Link
1115–4T	Housing for Ball Bearing
1116–1T	Screw for Housing
1117–3T	Ball Bearing
1118–2T	Set Screw for Lifting Lever
1119–1T	Spacing Washer for Connection Link
1120–1T	Head Bolt
1121–1T	Spacing Washer for Crank Handle
1122–1T	Ball Bearing for Crank Spindle
1128–1T	Lock Nut for Crank Arm Bearing Screw
1129–1T	Washer for Head Bolt
1131–1T	Plate for Crank Spindle Bearing—Left
1132–1T	Plate for Crank Spindle Bearing—Right
1133–1T	Screw for Crank Spindle Bearing Plates
1134–1T	Dowel Pin for Crank Handle
1142–3T	Screw for Bumper
1205–6T	Capstan Nut
1210–2T	Hardened Bushing for Elevating Screw
1231–3T	Anvil—Deep V, ¾" Shank
1232–3T	Anvil—Shallow V, ¾" Shank
1233–1T	Anvil—2" Flat, ¾" Shank
1234–1T	Anvil—Spot, ¾" Shank
1236–1T	Anvil—2½" Flat, ¾" Shank
1606–1T	Front Toe for Pedestal
1607–1T	Lock Nut for Front Toe
1608–1T	Lock Washer for Front Toe
1639–1T	Rubber Bumper
1640–1T	Nut for Bumper
1641–1T	Spacer for Bumper
1645–1T	Ball Connection Pillar for Model 3R
1646–1T	Ball Connection Pillar for Model 1R
2003–3T	Model 1R Elevating Screw
3123–3T	Screw for "ROCKWELL" Name Plate
3124–1T	Anvil—3" Flat, ¾" Shank
3126–1T	Nut for "ROCKWELL" Name Plate
3127–3T	Screw for Caution Head Plate and Scale Pillar Plate
3202–4T	Caution Head Plate
3204–7T	"ROCKWELL" Name Plate
3210–1T	Scale Pillar Plate
3211–4T	Pin for Capstan Nut
3831–6T	Model 3R Elevating Screw
4517–5T	Crank Handle
7009–2T	Index Guide Block Unit
7011–2T	Complete Dash Pot Unit
7012–2T	Dash Pot Tube Unit
7014–2T	Top Connection Sleeve Unit
7015–2T	Bottom Connection Sleeve Unit
7018–2T	Plunger Rod Unit
7020–1T	Seating Collar Unit
7022–3T	Universal Screw for Index Lever
7024–1T	1/16" Ball Penetrator Chuck
7032–2T	Complete Link Unit
7077–1T	⅛" Ball Penetrator Chuck
7078–1T	¼" Ball Penetrator Chuck
7079–1T	½" Ball Penetrator Chuck

Models PR "ROCKWELL" Hardness Tester
Model PS "ROCKWELL" SUPERFICIAL Hardness Tester

Orders for parts, except penetrators, should invariably give the individual number of the machine for which they are required, as well as part number and part name





Please keep in mind that we put the "ROCKWELL" Hardness Tester on the market in 1921 and that since then the tester has gone, by evolution, through many models; so be sure to give the individual machine number when orderings parts. Do not order parts by some name that seems appropriate to you but please use our name for the part as given on page 35. Use that name as well as part number and so guard against typographical error in specifying part number.

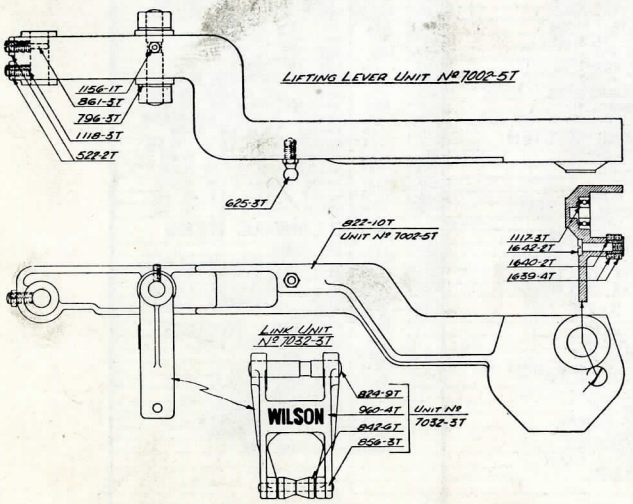
"ROCKWELL" Hardness Tester Parts Lists
For Model PR of Normal Type and Model PS of "Superficial" Type

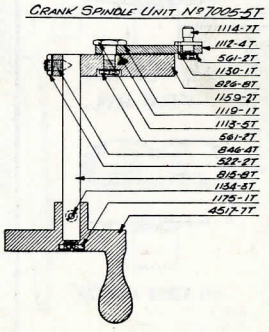
CAUTION—Orders for parts, except penetrators, should invariably give the individual number of the machine for which they are required.

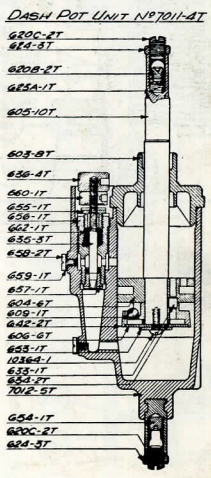
Part No.	Name of Part
218–6T	Fulcrum Knife Edge for Power Lever
220–8T	Set Screw for Power Lever
302–2T	Collar for Plunger Sleeve
305–7T	Plunger Knife Edge
306–5T	Spring for Plunger—Regular
308–6T	Concentric Bearing Sleeve
310–5T	Set Screw for Bearing Sleeve
317–3T	Guide for Plunger Knife Edge
319–5T	Screw for Power Lever Plate
320–5T	Eccentric Bearing Sleeve
406–8T	Penetrator Clamp Screw
410–3T	"BRALE"
528–3T	Screw for Index Guide Block
529–11T	Index Lever
531–4T	Pin for Index Lever
534–2T	Washer for Gauge
536–4T	Screw for Gauge
560–4T	Dowel Screw for Index Block
564–2T	Dowel Pin for Gauge
579–1T	Washer for Index Lever
783–2T	Cowl Bumper Plate
788–1T	Cowl Trunnion—Left
789–1T	Cowl Trunnion—Right
797–2T	Spacer for Crank Spindle Bearings
802–4T	Screw for Clamp Ring
803–6T	4″ Base Bushing—Size 1 only
804–9T	Clamp Ring
805–5T	Set Screw for Base Bushing
809–6T	Plunger Sleeve
811–2T	Lock Ring for Plunger Sleeve
819–10T	Bearing Spindle for Lifting Lever
821–5T	Stop Screw for Crank Arm
839–6T	Key for Elevating Screw—Size 1 Only
840–2T	Screw for Elevating Screw Key
841–1T	Lock Washer for Key Screw
867–4T	Pin for Lifter Yoke
868–4T	Lifter Yoke for Weights
964–2T	Bearing Pin for Power Lever
965–2T	Pillar for Power Lever Bearing Pin
966–1T	Screw for Bearing Pin Pillar
1109–1T	Bushing for Index Lever Pin
1110–3T	Guide Screw for Link Unit
1120–2T	Head Bolt
1121–1T	Spacing Washer for Crank Handle
1122–1T	Ball Bearing for Crank Spindle
1129–1T	Washer for Head Bolt
1131–1T	Plate for Crank Spindle Bearing—Left
1132–1T	Plate for Crank Spindle Bearing—Right
1133–2T	Screw for Crank Spindle Bearing Plate
1149–1T	Gauge Adjusting Screw
1158–1T	Spring for Gauge Adjusting Screw
1160–1T	Screw for Fulcrum Cover
1161–1T	Knurled Nut for Index Lever Adjusting Screw
1167–2T	Nut for Index Block
1172–3T	Key for Elevating Screw—Size 3 & 4 only
1173–2T	5″ Base Bushing—Size 3 & 4 only
1186–1T	Fibre Stop Washer for Elevating Screw

Part No.	Name of Part
1189–1T	Metal Stop Washer for Elevating Screw
1205–7T	Capstan Nut
1232–5T	Anvil—Shallow "V", ¾″ Shank
1234–4T	Anvil—Spot, ¾″ Shank
1236–4T	Anvil—2½″ Flat, ¾″ Shank
1606–2T	Pedestal Toe
1607–2T	Lock Nut for Pedestal Toe
1608–1T	Lock Washer for Pedestal Toe
1609–1T	Oil Hole Cover for Lifting Lever Spindle
1610–1T	Woven Wick for Lifting Lever Spindle
1645–2T	Ball Connection Pillar
2009–1T	Spring for Plunger—Superficial
2015–1T	"N" "BRALE" for Plunger—Superficial
3123–5T	Screw for "ROCKWELL" Name Plate
3124–2T	Anvil—3″ Flat, ¾″ Shank
3128–1T	Screw for Bumper Plate and Scale Pillar Plate
3202–7T	Penetrator Caution Plate
3204–9T	"ROCKWELL" Name Plate—Regular
3207–5T	Superficial Direction Plate
3208–4T	"ROCKWELL" Name Plate—Superficial
3210–5T	Scale Pillar Plate
3211–4T	Pin for Capstan Nut
3220–3T	Cover for Fulcrum
10341–1	Pedestal Toe—Size 4 Only
7002–5T	Lifting Lever Unit (Assisting Parts Listed Below)
522–2T	Nut for Lifting Lever
625–3T	Ball Joint for Dash Pot
796–3T	Spacing Washer
822–10T	Lifting Lever
861–3T	Dowel and Clamp Screw for Lifting Lever
1117–3T	Ball Bearing for Lifting Lever
1118–3T	Set Screw for Lifting Lever
1156–1T	Set Screw for Lifting Link Spindle
1639–4T	Rubber Bumper
1640–2T	Bumper Clamp Nut
1642–2T	Screw for Bumper
7032–3T	Link Unit
7005–5T	Crank Spindle Unit (Assisting Parts Listed Below)
522–2T	Nut for Crank Arm
561–2T	Lock Nut for Crank Arm
815–8T	Spindle for Crank Handle
826–8T	Crank Arm
846–4T	Set Screw for Crank Arm
1112–4T	Connection Link for Crank Arm
1113–5T	Bearing Screw for Crank Arm
1114–7T	Pin for Connection Link
1119–1T	Spacing Washer for Connection Link
1130–1T	Dowel Pin for Connection Link
1134–3T	Dowel Screw for Crank Spindle
1159–2T	Spacer Washer for Crank Arm
1175–1T	Lock Nut for Crank Spindle
4517–7T	Crank Handle
10349–1	Set Screw for Trunnions
7007–5T	Size 3 Elevating Screw Unit
7009–3T	Index Block Unit

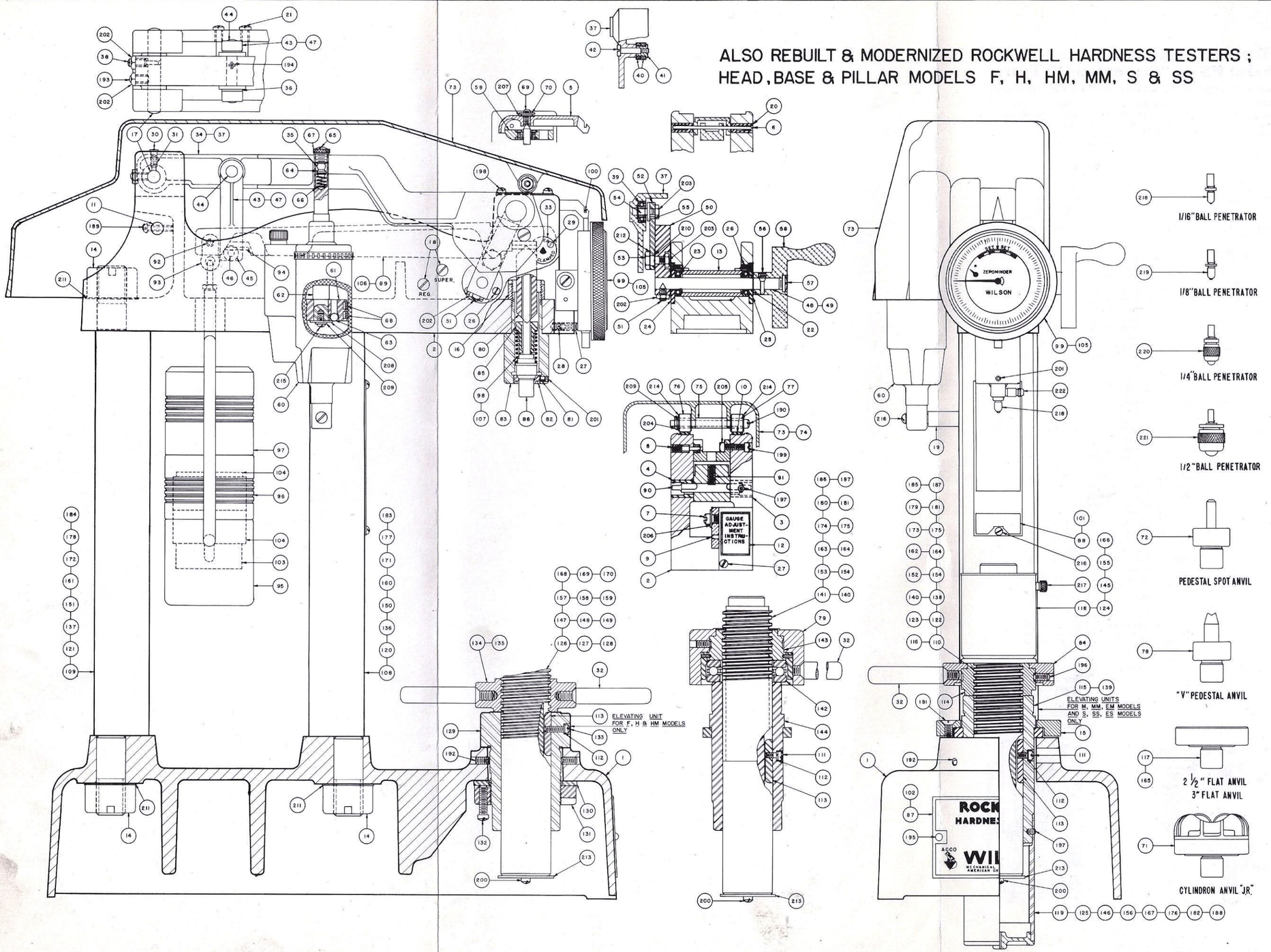
Part No.	Name of Part
7011–4T	Dash Pot Unit (Assisting Parts Listed Below)
603–8T	Screw Cap for Dash Pot
604–6T	Piston for Dash Pot
605–10T	Piston Rod for Dash Pot
606–6T	Oil Retainer Plate
609–1T	5/32″ Dia. Steel Ball
620B–2T	Ball Seat for Dash Pot Piston Rod
620C–2T	Top & Bottom Connection Sleeve Screw
623A–1T	Top Connection Sleeve Spring
624–3T	Lock Nut for Top & Bottom Sleeves
633–1T	Tubular Locating Pin for Dash Pot Piston
634–2T	Spacer for Dash Pot Piston and Oil Retainer
635–3T	Valve Rod
636–4T	Knurled Head for Dash Pot
642–2T	Ball Valve Retainer
653–1T	Clamp Washer for Dash Pot
654–1T	Bottom Ball Seat for Dash Pot
655–1T	Valve Gland for Dash Pot
656–1T	Valve Body for Dash Pot
657–1T	Valve Seat for Dash Pot
658–2T	Screw for Dash Pot Valve Chamber
659–1T	Oil Seal for Dash Pot Valve Chamber
660–1T	Lock Collar for Dash Pot
662–1T	Packing for Dash Pot Valve Rod
7012–5T	Dash Pot Tube Unit
10364–1	Screw for Clamp Washer
7016–1T	Plunger Sleeve Unit
7018–2T	Plunger Rod Unit
7020–1T	Seating Collar Unit
7022–4T	Universal Screw for Index Lever
7024–1T	1/16″ Ball Penetrator Unit
7032–3T	Link Unit (Assisting Parts Listed Below)
824–9T	Lifting Link Spindle
842–6T	Link Roller
856–3T	Spindle for Link Roller
960–4T	Lifting Lever Link
7035–4T	Power Lever Unit—Regular
7046–6T	Size 4 Elevating Screw Unit
7059–4T	Size 1 Elevating Screw Unit
7077–1T	1/8″ Ball Penetrator Unit
7078–1T	1/4″ Ball Penetrator Unit
7079–1T	1/2″ Ball Penetrator Unit
7131–4T	Size 1 Pedestal and Head Unit
7133–4T	Size 3 Pedestal and Head Unit
7135–4T	Model R Gauge Unit
7149–1T	Size 4 Pedestal and Head Unit
7151–1T	Cylindron Anvil Jr.
7173–4T	60 kg. Weight Pan Unit—Regular
7174–4T	50 kg. Weight Unit—Regular
7175–4T	40 kg. Weight Unit—Regular
7184–3T	Dust Protecting Cowl Unit
7188–4T	Model S Gauge Unit
70124–2	Power Lever Unit—Superficial
70157–1	15 kg. Weight Pan Unit—Superficial
75106–2	15 kg. Weight Unit—Superficial







ALSO REBUILT & MODERNIZED ROCKWELL HARDNESS TESTERS ; HEAD, BASE & PILLAR MODELS F, H, HM, MM, S & SS



ITEM	PART NO.	NAME OF PART
1	M1	BASE
2	M2	HEAD
3	308	CONCENTRIC BEARING SLEEVE
4	320	ECCENTRIC BEARING SLEEVE
5	329	INDEX LEVER
6	531	PIN FOR INDEX LEVER
7	536	SCREW FOR GAUGE
8	560	DOWEL SCREW - INDEX BLOCK
9	564	DOWEL PIN - GAUGE
10	738	BUMPER PLATE
11	790	COWL TRUNNION
12	3281	GAUGE ADJ. DECAL
13	797	SPACER - CRANK SPINDLE BEARINGS
14	801	NUT - PILLAR
15	804	CLAMP RING
16	811	LOCK RING - PLUNGER SLEEVE
17	819	BEARING SPINDLE - LIFTING LEVER
18	821	STOP SCREW - CRANK ARM
19	845	CONNECTION PILLAR - DASH POT
20	1109	BEARING INDEX LEVER PIN
21	1110	GUIDE SCREW - LINK
22	1121	SPACING WASHER - CRANK HANDLE
23	1122	BALL BEARING - CRANK SPINDLE
24	1131	PLATE - CRANK SPINDLE BEARING - L.
25	1132	PLATE - CRANK SPINDLE BEARING - R.
26	1133	SCREW - CRANK SPINDLE BRG. PLATE
27	1149	GAUGE POSITIONING SCREW
28	1158	SPRING - GAUGE POSITIONING SCREW
29	1160	SCREW - FULCRUM COVER
30	1609	OIL HOLE COVER
31	1610	OIL WICK
32	3211	PIN - CAPSTAN NUT
33	3220	COVER - FULCRUM
34	7002	LIFTING LEVER UNIT
35	625	BALL JOINT
36	796	SPACING WASHER - CRANK ARM
37	822	LIFTING LEVER
38	861	DOWEL AND CLAMP SCREW
39	1117	BALL BEARING - LIFTING LEVER
40	1639	RUBBER BUMPER
41	1640	BUMPER CLAMP NUT
42	1642	SCREW - BUMPER
43	7032	LINK UNIT
44	824	LIFTING LINK SPINDLE
45	842	LINK ROLLER
46	856	SPINDLE - LINK ROLLER
47	960	LIFTING LEVER LINK
48	7005	CRANK SPINDLE UNIT
49	815	SPINDLE - CRANK HANDLE
50	826	CRANK ARM
51	846	SET SCREW - CRANK ARM
52	1112	CONNECTION LINK - CRANK ARM
53	1113	BEARING SCREW - CRANK ARM
54	1114	PIN - CONNECTION LINK
55	1130	DOWEL PIN - CONNECTION LINK
56	1134	DOWEL SCREW - CRANK HANDLE
57	1175	LOCK NUT - CRANK SPINDLE
58	4517	CRANK HANDLE
59	7009	INDEX BLOCK UNIT
60	7011	DASH POT UNIT
61	604	PISTON - DASH POT
62	605	PISTON ROD - DASH POT
63	609	9/32 BALL VALVE
64	620 B	BALL SEAT - PISTON ROD
65	620 C	CONNECTION SLEEVE SCREW
66	623 A	CONNECTION SLEEVE SPRING
67	624	NUT - CONNECTION SLEEVE
68	663	RING - DASH POT PISTON
69	7022	INDEX LEVER - SCREW UNIT
70	1161	NUT - INDEX LEVER ADJ. SCREW
71	7151	CYLINDRON ANVIL JR.
72	7156	SPOT ANVIL UNIT
73	7164	COWL UNIT
74	784	COWL
75	785	SPACER, COWL BUMPER
76	1174	BUMPER - COWL
77	1643	INSERT - BUMPER
78	7195	"V" PEDESTAL ANVIL
79	10218	BALL BEARING CAPSTAN WHEEL
80	30266	PLUNGER KNIFE EDGE
81	30233	FIBER BUTTON PLUNGER SLEEVE
82	30244	COLLAR PLUNGER SLEEVE ADJ.
83	30248	PLUNGER SLEEVE
84	30285	CAPSTAN WHEEL
85	90249	SEATING COLLAR
86	90379	PLUNGER ROD

NORMAL TESTER

87	3204	NAME PLATE
88	3210	SCALE PLATE
89	7021	POWER LEVER
90	218	FULCRUM KNIFE EDGE
91	220	SET SCREW - POWER LEVER
92	867	PIN - LIFTER YOKE
93	868	LIFTER YOKE - WEIGHTS
94	1135	BEARING PIN - POWER LEVER
	421	C 60 TEST BLOCK
	421	C 25 TEST BLOCK
	426	B 80 TEST BLOCK
	426	B 40 TEST BLOCK
95	7025	WEIGHT - PAN
96	7027	40 KG. WEIGHT
97	7028	50 KG. WEIGHT
98	30201	MINOR LOAD SPRING
99	7135	DIAL GAUGE
100	7517	GAUGE CROSS PIN & RING UNIT

SUPERFICIAL TESTER

101	3207	SCALE PLATE
102	3208	NAME PLATE
103	7065	PAN UNIT
104	7066	15 KG. WEIGHT
105	7186	DIAL GAUGE
106	7214	POWER LEVER
107	30299	MINOR LOAD SPRING
	421	30 N-90 TEST BLOCK
	421	30 N-40 TEST BLOCK
	426	30 T-70 TEST BLOCK
	426	30 T-43 TEST BLOCK

FOR SIZE "1"

108	2001	FRONT PILLAR
109	2002	BACK PILLAR
110	7559	ELEVATING UNIT
111	840	SCREW - ELEVATING SCREW KEY
112	841	NO. 10 LOCK WASHER
113	1172	KEY - ELEVATING SCREW
114	30286	CAPSTAN NUT
115	80125	4" BASE BUSHING
116	7251	ELEVATING SCREW
117	1236	2 1/2 FLAT ANVIL
118	7159	PROTECTION SLEEVE
119	90381	SUB SLEEVE

ITEM	PART NO.	NAME OF PART
		FOR SIZE "2½"
120	20	FRONT PILLAR
121	21	BACK PILLAR
122	7539	ELEVATING UNIT
123	7252	ELEVATING SCREW UNIT
124	90171	PROTECTION SLEEVE
125	90381	SUB SLEEVE
126	7042-2RT	ELEVATING UNIT-REPAIR TYPE
127	BB-7042-2RT	BALL BEARING ELEVATING UNIT
128	7041-R2	ELEVATING SCREW UNIT-REPAIR TYPE
129	803-RT	BASE BUSHING-REPAIR TYPE
130	803-B	RING-REPAIR TYPE
131	804-RT	CLAMP RING-REPAIR TYPE
132	807	SCREW 1/4-28X1 FIL.HEAD
133	910	SCR-ELEVATING SCR-REPAIR TYPE
134	1205	CAPSTAN NUT
135	2505	BALL BEARING CAPSTAN NUT
		FOR SIZE "3"
136	30	FRONT PILLAR
137	31	BACK PILLAR
138	70103	ELEVATING UNIT
139	90340	BASE BUSHING
140	7253	ELEVATING SCREW UNIT
141	70106	BALL BEARING ELEVATING UNIT
142	1514	BALL BEARING-CAPSTAN NUT
143	70170	BALL BEARING CAPSTAN NUT
144	90341	BALL BEARING BASE BUSHING UNIT
145	7111	PROTECTION SLEEVE
146	90383	SUB SLEEVE
147	7008-2RT	ELEVATING UNIT-REPAIR TYPE
148	BB-7008-2RT	BALL BEARING ELEVATING UNIT
149	7007-R3	ELEVATING SCREW UNIT-REPAIR TYPE
		FOR SIZE "4"
150	40	FRONT PILLAR
151	41	BACK PILLAR
152	90121	ELEVATING UNIT
153	90119	BALL BEARING ELEVATING UNIT
154	7254	ELEVATING SCREW UNIT
155	7112	PROTECTION SLEEVE
156	90384	SUB SLEEVE
157	7047-2RT	ELEVATING UNIT-REPAIR TYPE
158	BB-7047-2RT	BALL BEARING ELEVATING UNIT
159	7046-R4	ELEVATING SCREW UNIT-REPAIR TYPE
		FOR SIZE "5"
160	50	FRONT PILLAR
161	51	BACK PILLAR
162	90208	ELEVATING UNIT
163	90215	BALL BEARING ELEVATING UNIT
164	7255	ELEVATING SCREW UNIT
165	3124	3" FLAT ANVIL
166	7113	PROTECTION SLEEVE
167	90385	SUB SLEEVE
168	7052-2RT	ELEVATING UNIT-REPAIR TYPE
169	BB-7042-RT	BALL BEARING ELEVATING UNIT
170	7051-R4	ELEVATING SCREW UNIT-REPAIR TYPE
		FOR SIZE "6"
171	60	FRONT PILLAR
172	61	BACK PILLAR
173	7536	ELEVATING UNIT
174	7550	BALL BEARING ELEVATING UNIT
175	7256	ELEVATING SCREW UNIT
176	7290	SUB SLEEVE
		FOR SIZE "7"
177	70	FRONT PILLAR
178	71	BACK PILLAR
179	7537	ELEVATING UNIT
180	7551	BALL BEARING ELEVATING UNIT
181	7170	ELEVATING SCREW UNIT
182	7291	SUB SLEEVE
		FOR SIZE "8"
183	80	FRONT PILLAR
184	81	BACK PILLAR
185	7538	ELEVATING UNIT
186	7552	BALL BEARING ELEVATING UNIT
187	7181	ELEVATING SCREW UNIT
188	7292	SUB SLEEVE

ST'D SCREWS, NUTS & WASHERS

189	782	SCREW 10-32 X 7/8 RD. HD.
190	787	SCREW 10-32 X 2 1/2 FIL. HD.
191	802	SCREW 1/4-28 X 1 FLAT HD.
192	805	SCREW 1/4-28 X 3/4 SET
193	1118	SCREW 1/4-28 X 5/8 SET
194	1156	SCREW 1/4-28 X 3/8 SET
195	3123	SCREW 10 X 3/8 DRIVE
196	10133	SCREW 1/4-28 X 1/2 SET
197	10349	SCREW 10-32 X 1/4 SET
198	10355	SCREW 10-32 X 3/8 FIL. HD.
199	10361	SCREW 10-32 X 3/4 FIL. HD.
200	10373	SCREW 10-32 X 7/8 FIL. HD.
201	10399	SCREW 8-32 X 1/8 SET
202	522	NUT HEX 1/4-28
203	561	NUT HEX 1/4-50
204	866	NUT HEX 10-32
205	1167	NUT SQ 10-32
206	534	WASHER 1/4 X 9/16 PLAIN
207	579	WASHER 1/4 X 27/64 PLAIN
208	653	WASHER 13/64 X 3/4 PLAIN
209	786	WASHER 10 X .375 SHAKEPROOF
210	1119	WASHER 1/4 X 5/8 PLAIN
211	1129	WASHER 1 X 1 23/32 PLAIN
212	1159	WASHER 5/16 X 5/8 PLAIN
213	1189	WASHER 201 X 7/8 PLAIN
214	1641	WASHER 13/64 X 1/2 PLAIN
215	10384	SCREW 10-32 X 3/8 RD. HD.
216	10387	SCREW 10-32 X 1/4 RD. HD.

MISCELLANEOUS ITEMS

217	774	SET SCREW
218	7201	1/16 BALL PENETRATOR - 50 BALLS
219	7202	1/8 BALL PENETRATOR - 8 BALLS
220	7203	1/4 BALL PENETRATOR - 4 BALLS
221	7204	1/2 BALL PENETRATOR - 2 BALLS
222	90300	"GRIPSEL"
	739	FIBER SHIELD - INDEX LEVER
	854	DUST COVER - SIZE 2 1/2
	855	ANVIL BLOCK
	1654	DUST COVER - SIZE 1
	3854	DUST COVER - SIZE 3
	4854	DUST COVER - SIZE 4
	5854	DUST COVER - SIZE 5
	7211	OIL - ELEVATING SCREW
	10374	SCREW - ANVIL RACK
	90170	OIL - DASH POT

ITEM	REVISION	BY	DATE
G			
F			
E			
D			
C			
B			
A			

NOTE

SCALE FULL

WILSON MECHANICAL INSTRUMENT DIVISION
AMERICAN CHAIN & CABLE COMPANY, INC.
BRIDGEPORT — NEW YORK

MODEL "EM" & "ES"
ROCKWELL HARDNESS TESTER

DRAWN K.R. WILKES 1/7/54
CHECKED C.B.S. 1-12-55
APPROVED

NO. 7240 - "EM"
7241 - "ES"